Medical Library JAN 5 1943

THE AMERICAN JOURNAL of PSYCHIATRY

VOLUME 99
NUMBER 3
NOV. 1942

Official Organ of
THE AMERICAN PSYCHIATRIC ASSOCIATION

NOVEMBER CONTENTS 1942

A Musician's Point of View toward Emotional Expression. *Howard Hanson* 317

The Admission of Patients to Hospitals for Mental Diseases. *Gustav Aschaffenburg*. 326

Irresponsibility of Juvenile Delinquents. *D. A. Thom* 330

Course in Military Neuropsychiatry. *Roy D. Halloran and Paul I. Yakolev* 338

Social Data in Psychiatric Casualties in the Armed Services. *Alexander Simon and Margaret Hagan* 348

Aircrew Selection. *Wing Commander H. D. Mitchell* 354

Wartime Tasks of Psychiatric Social Workers in Great Britain. *Mildred C. Scoville*. 358

Non-Convulsive Electric (Faradic) Shock Therapy of Psychoses Associated with Alcoholism, Drug Intoxication and Syphilis. *Nathaniel J. Berkwitz* 364

Consideration of Results with Psychoanalytic Therapy. *C. P. Oberndorf* 374

Subconvulsive Electric Shock Treatment of the Psychoses. *Walter Anderson Thompson* 382

Spinal Injuries in Shock and Epileptic Convulsions. *Joseph E. Barrett, James B. Funkhouser and W. Allen Barker* 387

The Treatment of Psychoses with Long Protracted Insulin Coma. *Joseph Wortis, Milton Terris and Irvin M. Korr* 391

Evaluation of the Effects of Intravenous Insulin Technique in the Treatment of Mental Diseases. *Philip Polatin and Hyman Spotnitz* 394

A Preventive Mental Hygiene Program for Schools. *M. A. Tarumianz* 398

Investigation of the Effect of Inhalation of 9 Per Cent Oxygen for 20 Minutes in Non-Psychotic and Schizophrenic Male Subjects. *William L. Holt, Jr* 406

Psychiatric Uses of Intravenous Sodium Amytal. *Daniel J. Sullivan* 411

Autonomic Nervous System Function in Children with Behavior Problems as Measured by the Parotid Secretory Rate. *R. S. Lourie, S. E. Barrera and E. I. Strongin* 419

Prefrontal Lobotomy in Chronic Psychoses. *Magnus C. Petersen and Harold F. Buchstein* 426

The Rôle of the Psychiatric Social Worker in the Selection of Men for the Armed Forces. *Marian McBee and George S. Stevenson* 431

Time Element in the Treatment of Drug Addiction. *M. J. Pescor* 435

What Unemployment Does to People. *Sol Wiener Ginsburg* 439

Symmetrical Bilateral Granular Atrophy of the Cerebral Cortex of Vascular Origin. *Andrew J. Akelaitis* 447

In Memory of William James. *G. S. Brett* 454

Comment:

Mental Hospital Survey. Dr. Mira Delivers Salmon Lectures 458

News and Notes:

Western State Psychiatric Hospital, Pittsburgh, Pennsylvania. Public Health Nurses Needed. Death of Mrs. Pauline Davis. Southern Psychiatric Association Meetings Deferred. Prize Announcement. Advanced Psychiatric Nursing, Columbia University. Science, War and Humanity. Appointment of Mr. Komora at Albany. Post-War Civilization. Manual of Civilian Mental Health. General Semantics Lecture Course. Cancellation of Session. Pennsylvania Psychiatric Society Meeting 461

Book Reviews:

Epilepsy and Cerebral Localization. *Wilder Penfield and Theodore C. Erickson* 466

The Function of the Orgasm. *Wilhelm Reich* 467

Technique of Analytical Therapy. *Wilhelm Stekel* 468

Guide Book for Boys. *Stephen Habbe* 469

Developmental Diagnosis. *Arnold Gesell and Catherine S. Amatruda* 470

Basic Problems of Behavior. *Mandel Sherman* 470

The Clinical Application of the Rorschach Test. *Ruth Bochner, Florence Halpern and K. M. Bowman* 471

A Short History of Psychiatric Achievement. *Nolan D. C. Lewis* 471

The Principal Nervous Pathways. *Andrew T. Rasmussen* 471

Conditioned Reflexes and Psychiatry. *Ivan Petrovitch Pavlov* 471

In Memoriam:

Eleanor Clarke Slagle. *Horatio M. Pollock* 473

A MUSICIAN'S POINT OF VIEW TOWARD EMOTIONAL EXPRESSION[1]

HOWARD HANSON,[2] Mus. Doc., LL. D., F. A. A. R., Rochester, N. Y.

In accepting the invitation to speak before The American Psychiatric Association I should make it clear that I am speaking as a musician and a theorist with no special knowledge of musical therapeutics. It is my hope, however, that I may be able to throw some light upon the material of which music is made and to clarify our terminology and our thinking.

Such an analysis is, I believe, important if we are to use music as a means of influencing human beings. Music is a curiously subtle art with innumerable, varying emotional connotations. It is made up of many ingredients and, according to the proportions of these components, it can be soothing or invigorating, ennobling or vulgarizing, philosophical or orgiastic. It has powers for evil as well as for good. If we are to use it as a social or therapeutic force the first essential is that we find out something about it.

If I devote some little time in attempts to secure accurate definitions it is because, in company with the other arts, terminology in music is frequently loosely used. Too much discussion has been in terms of indefinite phraseology, frequently borrowed from other arts and not always particularly suitable. Inasmuch as emotional response to music is intimately connected with such basic factors as consonance, dissonance, rhythm, melodic displacement and the like, it seems wise to discuss these factors in terms which are as concrete as possible. This may be of some value to those who are interested in analyzing and classifying different types of music for practical use.

The material of musical composition may be described as consisting of three relationships of tone: the relationship of tones sounded simultaneously, the relationship of tones sounded consecutively, and the relationship of tones in terms of time. The first of these is commonly referred to as harmony, the second melody, and the third rhythm. A secondary relationship of horizontal lines of tone with each other is usually referred to as counterpoint. The relationship of a single melody and harmony is usually called homophony. The combined relationship of multiple melodic lines to the sonority governing that association, has been given no name but might be referred to as the study of polyphonic sonority. The overall relationship which embraces all of the basic and secondary relationships in what might be called pitch-space is usually given the somewhat misleading name of form.

The sensuous material of tone which in all of its relationships constitutes music needs no explanation in a group such as this. It might not be unwise, however, to point out that the tonal material as standardized today in occidental music is a fairly accurate approximation of the musical material naturally available in the over-tone series of nature and, therefore, has some claim to a scientific basis. It is obvious that if one takes two tones which constitute the relationship of 2:1, the perfect octave, in which the upper tones have duplicating overtones, one has the practical limits of a musical scale. This ratio may theoretically be divided into an infinite number of scale degrees. The smallest of these pitch differences would, of course, become indiscernible to the human ear. However, if we were to use only a pitch increment appreciable to the average human ear it would be quite possible to produce a musical scale with at least 48 scale degrees instead of 12. The scale as we know it is, however, an eminently practical means of musical expression, and since it has sufficed for the development of occidental music we may perhaps most wisely confine our attention to the development of music within this system.

This system may be described briefly as consisting of the division of the octave into

[1] Read at the ninety-eighth annual meeting of The American Psychiatric Association, Boston, Massachusetts, May 18-21, 1942.

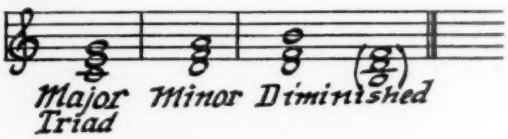
[2] Director of the Eastman School of Music, University of Rochester; composer of "Merry Mount," an American opera produced by the Metropolitan Opera Company.

twelve equal parts, mathematically the twelfth root of the octave ratio, 2/1. This produces the following scale:

1, $\sqrt[12]{2}$, $\sqrt[6]{2}$, $\sqrt[4]{2}$, $\sqrt[3]{2}$, $(2)^{5/12}$, $\sqrt{2}$, $(2)^{7/12}$, $(2)^{2/3}$, $(2)^{3/4}$, $(2)^{5/6}$, $(2)^{11/12}$, 2.

The relationship of 1 to 2, exactly approximates the relationship of a fundamental to its 2nd partial; the relationship of $1:(2)^{7/12}$ closely approximates the 3/2 ratio of the fundamental and its third partial; and the relationship of $1:\sqrt[3]{2}$ somewhat less satisfactorily approximates the 5/4 ratio of the fundamental to its 5th partial. Since these three partials comprise the consonant relationship of the major triad it will be seen that the present equally-tempered scale is a rather satisfactory means of musical expression both harmonically and melodically.

No.1.



No.2

The history of thoroughly integrated harmonic and melodic composition is usually considered to begin in the sixteenth century, though many theorists would include music written much earlier. The hall mark of this music is melody in simple scale forms and an overwhelming preponderance of consonant sonority. It includes, furthermore, a tight integration of the melodic line with the sonority in terms of time relationship so that the predominant horizontal as well as vertical effect is consonant.

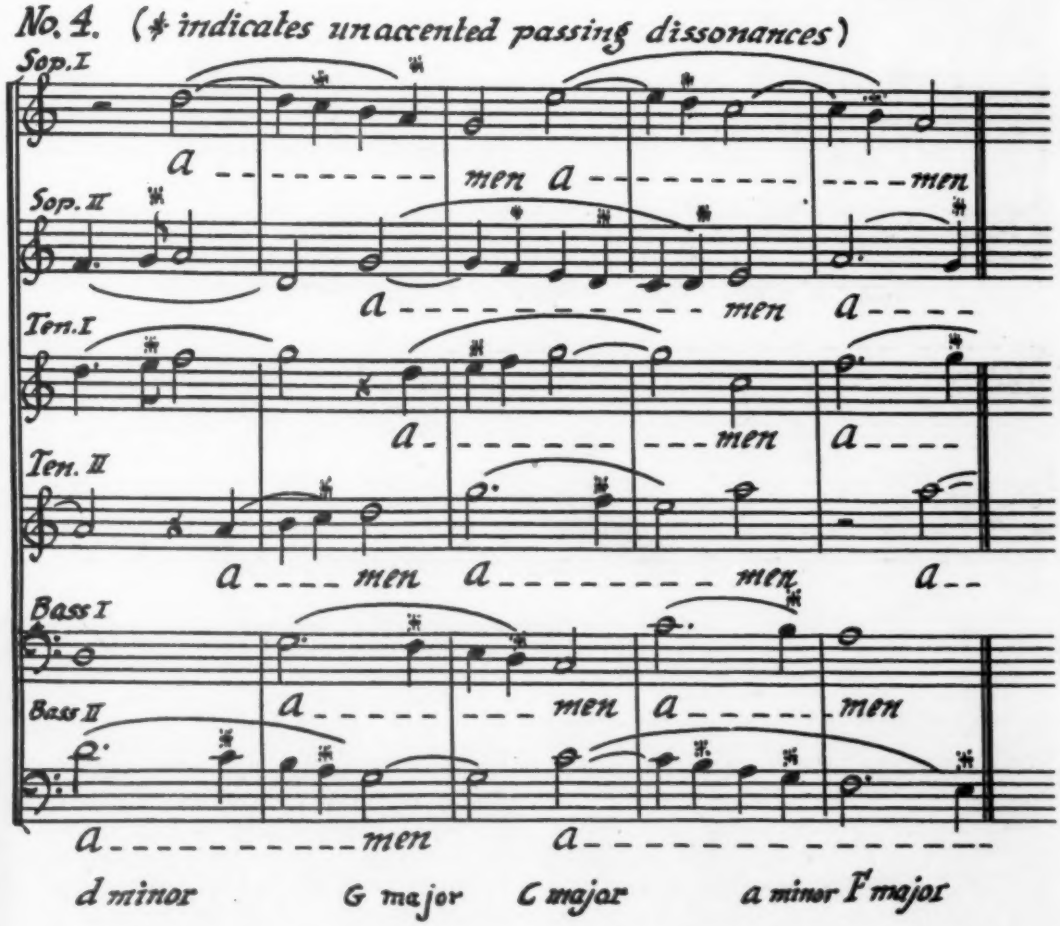
The sonorous material of the sacred music of Palestrina, for example, consisted essentially of three types of harmonic bodies: the major triad, the minor triad, both consonant, and the diminished triad, a mild dissonance, which I shall illustrate. (No. 1.)

There are no complete compositions of this period which have exclusively consonant harmonic implications but I shall now play for you a short excerpt from the motet, *Veni Sanctus Spiritus,* by the sixteenth century Italian composer Giovanni Pierluigi da Palestrina, which is composed entirely of consonant sonorities. This excerpt consists exclusively of the use of the major and minor triads. (No. 2.)

Short examples of this type of writing are numerous in sixteenth century literature but comparatively rare at a later period. It is interesting, however, to turn quickly to the nineteenth century and see Richard Wagner momentarily using this technic in

the beginning of *Lohengrin* to depict purity and absence from human passion. (No. 3.)

It is comparatively easy, of course, to write music of complete consonance if only harmonic, melodic and time elements. Each component part of a melodic line is almost invariably consonant with the prevailing sonority at any point of rhythmic stress.

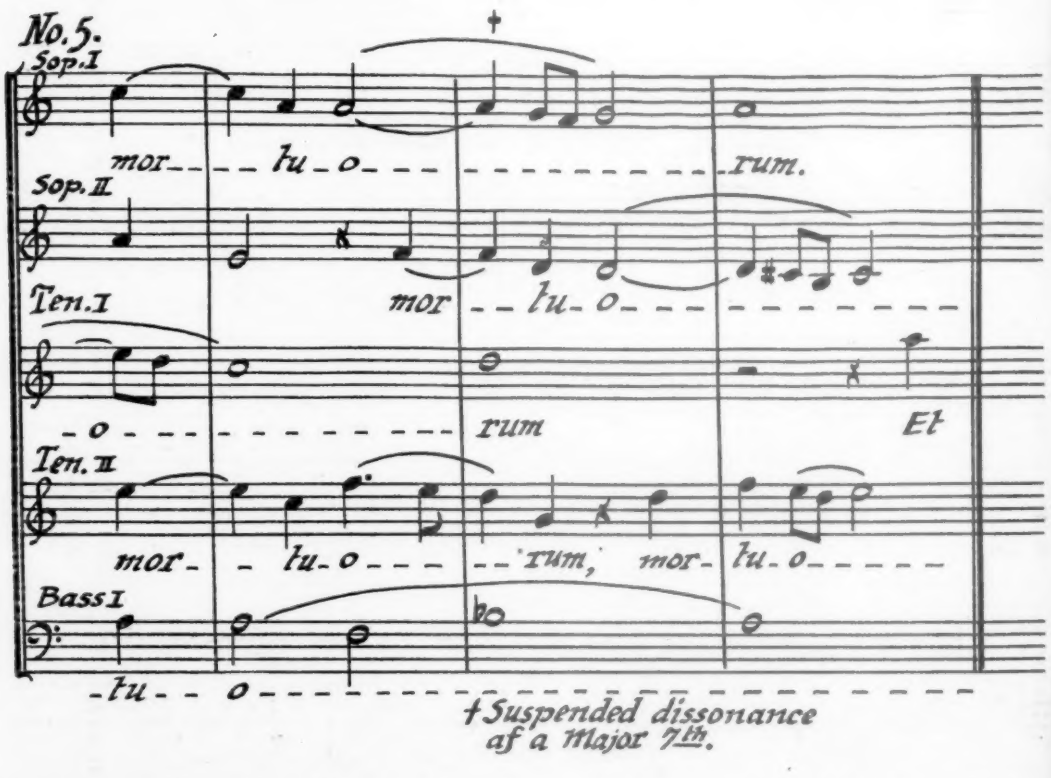


harmonic bodies are concerned. It is easily shown, however, that in the music of the Palestrina style almost complete consonance exists even in passages of contrapuntal complexity where a number of melodic lines are moving at once. This is achieved by means of the most careful co-ordination of the Any melodic note which would produce a dissonant impression is used in conjunct motion at un-stressed metric points, thus preserving the illusion of complete consonance. As an example of this I should like to quote the famous Amen cadence from the Credo of the *Pope Marcellus Mass.* (No. 4.)

Music of this type may be described as being calm, serene and in a sense impersonal. It has little to do with the emotion of the individual. It is cosmic in character and had its greatest development in the service of the Roman Catholic Church.

The expression of personal feeling in music seems inevitably to be associated with the use of dissonance. Indeed the expression of emotion in music seems to be bound up in the contrast between dissonance and consonance, the former producing a sense of tension and conflict to be either heightened by progression to a sonority of still greater tension or resolved by a succeeding consonance.

The dissonance of the music of the Palestrina style was for the most part dissonance secured by the metric device of displacement of a melodic line. In the familiar dissonant suspension, for example, a tone which is consonant to one sonority is delayed in its movement while the remaining tones move on to another consonant sonority in which the first melodic tone is held over as a dissonance. A tension is thus set up between the melodic tone and the consonant chord to which it is itself dissonant. In the same section of the *Pope Marcellus Mass* from which the previous example was taken we have an excellent illustration. When in the Credo the word "mortuorum" is reached the sonority suddenly becomes dissonant by virtue of the fact that the tone in the upper voice which was the consonant 3rd of a major triad is held over into a B flat major triad of which it is not a part. The result is a sharp dissonance on the word "dead"



contrasting strongly with the prevailing consonance. (No. 5.)

In listening to this music it will be observed that rhythmically the music might also be considered to be essentially "consonant." The melodic voices proceed smoothly, the moving tones being for the most part equal subdivisions of the metric pulse. Where notes are of unequal length the longer note generally occupies the principal pulse and the shorter notes follow the longer—quite the opposite from the rhythm of modern jazz.

Even in this age of essential consonance

we can find examples of the conscious employment of free dissonance for emotional effects. No better example of the radical of his day can be found than the fascinating figure of Palestrina's younger contemporary, Gesualdo. Man of the world, social gallant, artistic dilettante, swash-buckling swordsman who did not hesitate to settle his arguments with steel, Gesualdo himself constitutes an interesting psychological study. Cecil Gray in his little book "Gesualdo, Prince of Venosa, Musician and Murderer" gives an interesting picture of this musical radical.

No. 6.

It is natural that such a man should be musically as well as socially unconventional. If we examine his music we find the use of free dissonance for expressing the emotion indicated by words. In his setting of the madrigal *Tu m'uccidi, o crudele* he uses the dissonance of the unfamiliar augmented triad to emphasize the word "kill" even though the poem has to do only with the killing of love by the heartless fair one. (No. 6.)

He introduces another technic which is even more important. This has to do with what we may call dissonance produced by the process of association. Let me construct a simple example. The first six notes of our national anthem outline a consonant triad. The line is purely melodic in the sense that these notes are sung in unison without harmonic accompaniment. The impression, however, is one of harmonic consonance because the mind retains the memory of the previous tones and relates them as a consonance. If the opening melody had the same direction and rhythm but were written as follows: F, B, Gflat, C, G, Dflat, the effect would be melodically dissonant even if no two tones are ever sounded simultaneously. (No. 7.)

No. 7. *Consonant line.* *Dissonant relationship.*

In his motet, *Moro lasso al mio duolo,* Gesualdo employs this technic by using consonant chords which, though consonant in

themselves, produce an effect of unrest by the juxtaposition of consonant sonorities

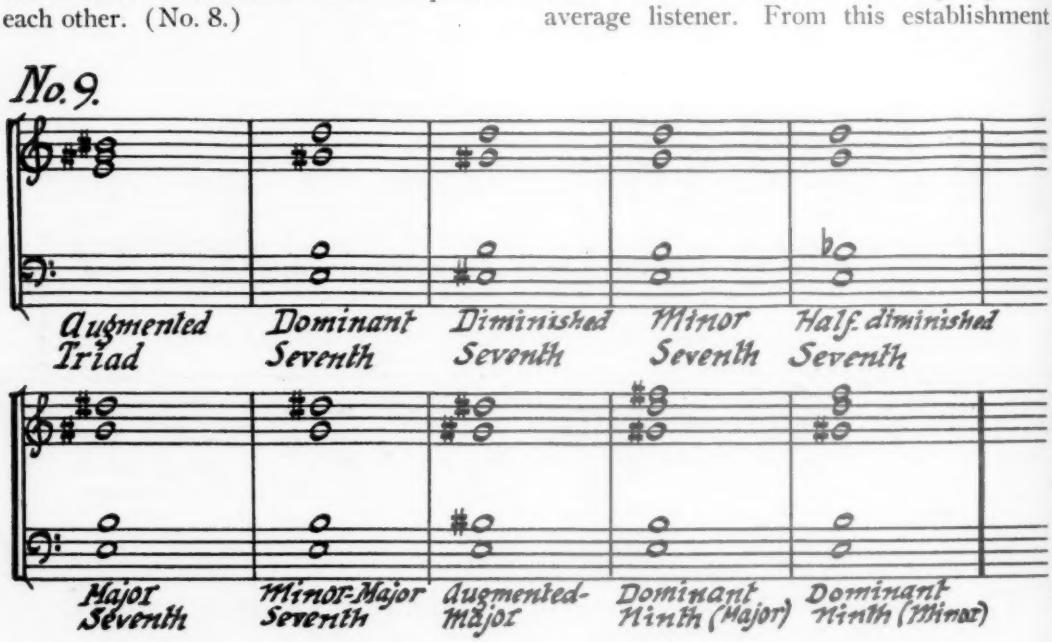
No. 8.

which have a dissonant relationship with each other. (No. 8.)

of Palestrina we have added in the music of Bach a fourth triad, mildly dissonant, and a group of four tone and five tone combinations of various degrees of dissonance. Let us listen to the three basic Palestrina sonorities and then to some of the additional dissonant sonorities which we find in Bach. (No. 9.)

Not only has the use of dissonant sonorities greatly increased but the pattern of dissonance followed by resolving consonance has become so established that it has given rise to a whole chain of associations which makes itself felt sub-consciously by the average listener. From this establishment

No. 9.



Inasmuch as I am attempting to cover four centuries of music in twenty minutes we must make a jump of about 150 years, leaving the period of vocal polyphonic music developed under the protecting ægis of the Catholic Church and going to early eighteenth century Germany to a style also vocal and contrapuntal, but Protestant rather than Catholic in its inspiration.

We find that in the intervening years a great change has occurred both relating to sonorities and contrapuntal lines. Music has lost its predominant consonance and has developed a personal emotionalism always associated with the use of dissonance. To the two consonant and the one moderately dissonant triads commonly used in the music of what the musician calls tonality we have not only the tension between consonance and dissonance but the tension set up between a so-called key-center and notes related to it. The term dominant has come to have a psychological as well as a purely technical meaning. The musician speaks of the frustration of tonality by evasion, of "positive" and "negative" progression; in short, a whole series of adjectives which have their origin in the "feeling" induced by the music.

Another important technic has also been developed which has to do with the time-relationship of melodic lines. I have pointed out that in the Palestrina style the sonorities were essentially and predominantly consonant, but that dissonance was introduced

through rhythmic displacement of melodic lines by what the musician calls suspension, anticipation and the like. In the music of Bach, however, dissonance in the melodic line is consciously used by the simple expedient of reversing the order of consonance and dissonance in terms of its position relative to the rhythmic pulse. That is, instead of having the consonant melodic note on the strong pulse followed by an interpolated dissonant "passing" note, the order is reversed so that the dissonant melodic passing note comes on the accent (over a consonant sonority) followed by the consonant resolution. By this device the melody in itself takes on consonant and dissonant implications thereby greatly increasing the possibilities of emotional expression.

The example which I have chosen to illustrate these points is a short passage from the opening of the final chorus of the Bach *St. Matthew Passion*. The music depicts the grief of the Christian world at the death of its Saviour and is one of the noblest examples of the expression of sorrow in all musical literature. (No. 10.)

The age of Bach was followed by the so-called classic period which introduced surprisingly little additional technical material from that employed by Bach. It did, however, explore further the possibilities of rhythm, of homophony and of formalized structure. This period marks the predominant influence of the dance upon serious music. This influence, combined with the highly formalized structure inherent in the classic age, produces a music which is highly rhythmic, graceful and sometimes invigorating. It is not essentially emotional music but reverts somewhat to the impersonal characteristics of the music of the sixteenth century.

With the coming of the nineteenth century and the beginning of the Romantic school of composition we find the further intensification of emotional expression. Emotion, furthermore, has come to mean "personalized" emotion, the expression of the individual. For this reason music will be seen to bear the personal mark of its creator. His own emotional experiences, his philosophy, will be directly reflected in the music. For the time being "abstract" music does not exist. This highly personal conception of music finds its most complete expression in the music of Richard Wagner.

Let us examine briefly the opening bars of the Prelude to *Tristan and Isolde*. Wagner is seeking here to set the stage for the passionate drama of tragic love and frustrated passion. He achieves his aim by utilizing with consummate genius the technic already described. The melodic line is harmonized by a dissonance resolving to a dominant consonance but with an accented chromatic dissonance in the melody. Before this harmony can seek its point of rest the phrase is torn from its tonal context, sequenced twice, and expanded in order to heighten as much as possible the emotional tension. When the dominant chord is finally resolved the normal resolution is evaded by the so-called deceptive cadence and the music pro-

ceeds on its passionate and frustrated way. (No. 11.)

This period is full of interesting case histories for the psychiatrist. There is, for example, that curious Russian genius, Scriabine, with his attempt to fuse the senses of color and sonority in his symphony *Prometheus*. Time permits, however, only a quick reference to Claude Debussy, founder of the Impressionist School, in some of whose compositions there is the closest approach to a clinical use of sonority. Upon the theory that a given sonority produces a certain effect upon the listener, Debussy has created impressionistic moods by repeated use of the same type of harmonic structure. This is only one characteristic of the technic of the French master but it constitutes a new approach to the value of a sonority as an end in itself. The following brief illustration from a work written entirely in the whole tone scale with no other type of sonority utilized is a most striking example. (No. 12.)

The twentieth century in music is developing in a variety of directions and it is too early to describe what its most important contributions may be. It seems probable, however, that the resources to be newly explored will have at least as much to do with time relationships, rhythmically and metrically, as with harmony and melody. As an introduction to the twentieth century let us hear a few bars from Stravinsky's *Rites of Spring*. You will notice not only the use of a more complex type of dissonant sonority but the intrusion of a strong but irregular pulse which seems to revert to primitive music. (No. 13.)

I have attempted in the foregoing paper to review in a short time a few of the most important developments in the history of musical composition and to remark upon the technics which have contributed to particular types of musical expression. The emotional connotations of music are highly complex in character. They are also, I believe, more powerful than is generally realized. I hesitate to think of what the effect of music upon the next generation will be if the present school of "hot jazz" continues to develop unabated. It should provide an increasing number of patients for your hospitals and it is, therefore, only poetic justice that musical therapeutics should develop at least to the point where music serves as an antidote for itself!

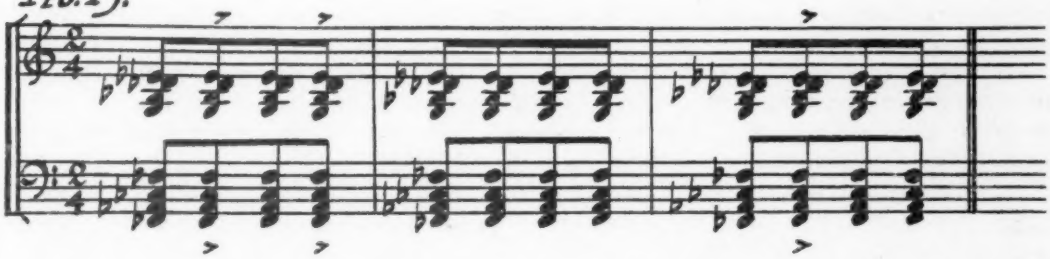
No. 11.

No. 12.

In conclusion may I make certain concrete suggestions. Music in its relationship to the emotions presents several fascinating fields of study, none of which have been widely explored. There is first the study of the music as an expression of the individual who creates it, second the study of music in relation to the age from which it springs, third the scientific analysis of musical technics and their relationships to emotional expression, and fourth the study of the effects of these various types of music upon the listener.

A combination of the third and fourth categories which would enlist the aid both of skilled musical theorists and psychiatrists would, I believe, throw much light upon the influence of music, both benevolent and malevolent, in the lives of people. For in this day when through the radio the country is literally flooded with sound it seems logical to assume that music is destined to play an important part in helping to preserve mental sanity on the one hand or, if misused, to add to the emotional strain of an age already over-taxed by disruptive forces.

No. 13.



THE ADMISSION OF PATIENTS TO HOSPITALS FOR MENTAL DISEASES

GUSTAV ASCHAFFENBURG, M. D., PH. D., LL. D., BALTIMORE, MD.

In a recent article [1] Dr. Winfred Overholser emphasizes the necessity of admitting mentally deranged persons to hospital with as little delay as possible. The mere fact that Dr. Overholser thought it necessary to write this paper proves that the admission of the mentally ill is not regulated in a way satisfactory to the psychiatrist and to the requirements of the public health. It is a subject of great importance. In all institutions for mental diseases in the United States in 1938 there were not less than 10,169 first admissions, 33,222 readmissions and 9,845 transfers from other hospitals for the same kind of diseases.[2] To take proper care of this large army is a difficult task because of the many laws that are still rather backward. As Dr. Overholser has pointed out, some states even demand a regular jury trial before the patient can get the treatment he needs. Doubtless this strange expedient is dictated by the fear that a man might be admitted to a hospital for mental diseases and held there without being ill at all, "railroaded" as the expression goes.

Supposing that there have been or still are some cases in which a family would like, with criminal intent, to get rid of a perfectly normal man and supposing furthermore that they could find physicians dishonest enough to submit to this request and to agree to admitting this man—in reality, not in detective stories—is this justification for compelling so many patients to undergo the humiliation and distress caused by the farce of a public trial in which laymen judge the existence or non-existence of mental troubles and the necessity of commitment?

And even in states where this objectionable method is not in use the procedure of admission is not regulated as it should be. Overholser relates that according to the latest reports, 65 per cent of the patients were taken to the mental hospitals by the sheriff or police officers, and, pending suitable transportation, 29 per cent were held in jails! In 1933 a bill humanizing the commitment law passed the two houses of the legislature in California; but the Governor vetoed it upon the request of the California Sheriffs' Association. They did not want to lose the high fees for transportation and protested; successfully!

Until all formalities are settled the patient is under the "care" of his family or is transferred to prison; in the most favorable cases to an ordinary hospital. In the latter case if the patient is quiet and cooperative he may be treated appropriately, although the danger of suicide should be taken in consideration. In all other cases, for instance in epileptic or toxic delirium, in catatonic, manic or paretic excitement, the hospitals—not to speak of jails and families—are lacking in specially trained nurses and in suitably equipped wards, where agitated, aggressive and sometimes very dangerous patients can be kept without serious risk to themselves or others and can receive the skilled treatment suitable to their condition. Mechanical restraint with all its evil consequences is one of the results of this lack of proper facilities. It appears that the idea of "railroading" is so deep-rooted in the minds of ordinary people, jurists and legislators, that they put an unfortunate mentally deranged person in jail rather than in the care of a psychiatrist. There is still much popular misunderstanding, prejudice and antipathy towards everything connected with mental diseases. It is strange that an antiquated practice should be excused by the pretention of regard for "The Bill of Rights" which guarantees that no person shall "be deprived of life, liberty, or property without due process of law," while the laws of 14 states permit the detention of persons "alleged" to be insane in jails and lockups. "The fact is that in some backward states mentally ill persons, guilty of no crime or offense, are detained in such institutions (prisons and jails) for many months and even years at a time." [3] How

[1] J. A. M. A., 108: 1027 (1942).

[2] Patients in mental institutions, 1938. p. 5. United States Government Printing Office, Washington, D. C. (1942).

[3] Albert Deutsch: The mentally ill in America. p. 433. New York (1937).

then about "The Bill of Rights"? How about the guarantee of liberty, how about the right of the ill to be treated properly and skillfully?

Many, although not all, states permit emergency admissions without many formalities in cases of danger for the patient or the public. This should be a minimum measure everywhere; but in some states it is regarded as unconstitutional. In most states the patient can be admitted if he himself makes voluntary application or approves of his admission. In Scotland more than 50 per cent of the patients in the royal asylums are admitted by voluntary application.[4] This excellent measure, which serves the interest of the patient, we as psychiatrists approve—although with a sort of bad conscience. "It seems almost an anomaly to legalize the admission of a voluntary patient by his own written application for admission to be treated for a disease, the chief characteristic of which is a condition of irresponsibility." [5]

Notwithstanding this objection the voluntary method, together with emergency admissions in urgent cases, should be the method of choice, at least as long as the statutes and public opinion insist on discriminating between the admission of mentally ill patients and the admission of other medical or surgical cases, *i.e.*, without any formality.

That the latter method is possible and works well I have personally experienced during my 26 years as director of the clinic for mental and nervous diseases at the University in Cologne, Germany. I hope that a report of my experience may be found helpful in showing that undesirable methods of committing and admitting patients can be ameliorated; and also in demonstrating that prejudices against asylums, psychiatrists and mental troubles in general, are not as deep-rooted and hopeless as it may often seem.

For nearly 10 years I was resident psychiatrist at the university clinic for mental diseases in Heidelberg under the direction of Emil Kraepelin. The admission of the patient depended on the approval of the Government of the district from which the patient came. Emergency cases could be admitted, but the health officer was summoned to give a certificate. Voluntary admissions were forbidden. We therefore experienced all the inconveniences previously mentioned. We have observed suicide, murder, manslaughter, mistreating, wasting of money of the patient as consequences of the delay in admissions occasioned by administrative red tape. And since we could not admit patients who did not exhibit serious mental troubles, psychopathic personalities and organic diseases, except paretics, were entirely excluded. Kraepelin considered the problem of sufficient importance to make it the decisive issue when he was appointed director of the newly constructed modern psychiatric clinic in Munich. As a condition for his remaining in Heidelberg he stipulated that free admission should be authorized. When the Government of Baden, which had the reputation of being one of the most modern and progressive states of Germany, refused, he left Heidelberg and went to Munich.

Thus I was very familiar with the difficulties this problem of admission presents when, after an interval as director of an institution for insane criminals, I was appointed director of the Clinic for Mental Diseases in Cologne in 1904.

The living conditions of the patients at this clinic were scarcely satisfying. The buildings were very old, unfriendly, dark, worn out, the number of nurses and attendants by far too small, occupational therapy only available for some few patients. But the worst was the bad reputation of the hospital. The name "Lindenburg" (Borrough of Limes) was generally used to describe the dwelling of crazy people, very often as a means of threatening. The inmates if not ridiculed or insulted had to bear the mark of shame and disgrace. The inconveniences of hospitalization, admissions as well as transfers, were daily facts. We were permitted to transfer incurables to the state hospitals, but the transfer was often retarded by diagnostic or administrative arguments. Hence the hospital was horribly overcrowded.

However, the future was promising. A large hospital with all the various clinical

[4] Henderson and Gillespie: A textbook of psychiatry, 5th ed., p. 603 (1940).

[5] The institutional care of the insane in the United States and Canada. Vol. 1, p. 337. Baltimore (1916).

departments was to become the centre for the medical students of the University of Cologne. Among those clinics a new clinic was projected for mental and nervous diseases. It was taken for granted that the admission procedure should be the same as in all other clinics within this medical centre, *i.e.*, no formalities were henceforth required. Thus we were given the opportunity to admit psychopathic personalities along with organic diseases of the central nervous system.

A mistake was made when first planning the clinic. On the basis of an annual admission rate of 400 to 500 patients, we surmised that 110 beds would suffice. We had set this limit partly because funds were restricted, partly because we hoped that prompt evacuation would be possible. This hope was indeed realized; we could transfer our patients as soon as the diagnosis was established, when necessary even on the day of admission. A certificate with my own or my first assistant's signature was sufficient. We telephoned the state hospital and announced the transfer; it was never refused. Nevertheless we realized soon that we had underestimated the number of possible admissions. The patients lived mostly in Cologne and its suburbs. Cologne was at the beginning of a period of rapid growth which I had not foreseen; neither perhaps had the municipal authorities. But it had been my mistake to underestimate the possibility of an immediate volte-face of public opinion. Although I was conscious of the bad reputation of the asylum and convinced that ordinarily it takes much time to eliminate inveterate prejudices, I had hoped and even expected that eventually it could be done. But I never dreamed that it would happen so quickly and so completely.

In constructing the clinic I tried to follow as closely as possible Friedreich's plan, proposed 70 years ago, of an ideal "Stadtasyl" or city clinic to which every sort of nervous and mental disease could be admitted without formalities, and from which discharge or transfer could be effected without delay. Such was the clinic inaugurated in Cologne in 1908, and such it continued.

Since the time of Friedreich the treatment of the mentally ill has progressed immensely. The method of dealing with excited patients has entirely changed. No more do we restrain them, we keep them in beds under continuous supervision, day and night, on the so-called "Wachabteilung," which was first proposed by the French psychiatrist Parchappe. Experience taught us that depressives, who need supervision on account of the danger of suicide, could be treated together with excited patients without any trouble or danger. If a patient was quite unmanageable, the continuous bath was available and could be continued for days, even months, day and night—of course under constant supervision. This did away with isolation, not to speak of mechanical restraint.

Led by my desire to prove that public opinion as to the behaviour and the treatment of the mentally ill was erroneous, I ventured to abolish almost completely isolation in cells, building for each sex only two of them, and of these only one in each division with safety windows. Instead of isolation cells, I installed a room with 5 and another one with 3 tubs for the continuous bath. I abolished bars and all furniture or ward arrangement different from that of any of the other medical clinics. My idea was that this clinic should differ from any other hospital only through a more friendly, more cheering atmosphere. It was a success. My great optimism—and I really was optimistic—was overtaken by the facts. I used to demonstrate the clinic to physicians and officials, social workers and laymen, and have invariably been asked the same question, "Where are the excited patients?" Certainly we did have some. But it was not the sole effect of quick evacuation, although it did help much, but the influence of environment, the quiet behaviour of other patients, the herd-instinct of imitation, the soothing presence of skilled nurses and attendants, frequent visits of the physicians and, last not least, the effect of staying in bed, that caused the "excited" patients to appear comparatively calm.

At the beginning we had provided a separate ward for quiet patients, mostly depressive cases or patients with organic nervous diseases. We soon found that we could do without this special ward and so could afford a separate department for the observa-

tion and treatment of children of all ages. We had no complaints because of this system of having depressions and organic diseases, schizophrenics, epileptics or neurotics share the same ward, even though some patients may have been more or less excited at times. On the other hand, often our patients requested to be taken back to us, after having undergone some surgical or other treatment in one of the clinics within this medical centre. And in order to prove to everyone interested, especially to the relatives of our patients, that nothing in this clinic needed being concealed, we allowed visits on the wards, even to patients who might be in bed.

And now as to the effect on public opinion. The best proof of the salutary change was the rising number of admissions. Unfortunately I can not give exact figures or demonstrate my diagram of the admissions as my scientific material is not available now. The admissions amounted to more than 3,000 a year, more than 6 times the number at the time the clinic was inaugurated. Within a short time the afflux of organic diseases, psychopathics and children threatened to surpass that of the mentally ill. Distressing was the fact that usually we could not keep our patients long enough to give them the thorough care they needed. Only in the last years of my directorship—which lasted until 1934—were we able to adapt a house in the neighborhood of the clinic to the treatment of organic diseases and thus relieve the clinic.

And the fear of "railroading"? The public obviously did not think about it and neither did the patients. Only two patients in my experience brought a complaint of having been admitted and kept without reason. The first case was a manic-depressive; with the consent of his family we declined to dismiss him because in his elation he had spent excessive sums of money and had become engaged to different women, amongst them a vulgar prostitute. He recovered and was then grateful to us for having retained him. The other case was a schizophrenic who spoke clearly and refinedly. But he had threatened his family and burned his library. His friends, one of them a lawyer, contested the possibility that he might be insane and went into court, accusing me of unlawfully restraining the man's liberty. After suitable testimony proving the facts, the charge was dismissed without trial. Some months later we were able to give the patient a trial. His only reaction was to have a booklet privately printed, containing a somewhat confused story of his life and his detention in hospital and illustrated by himself in a manner which gave further proof that our diagnosis was correct.

With these I excluded also cases of drug addicts. They often impetuously requested to be dismissed instantly in the first tormenting days of abstinence. This request I denied. That may have been legally wrong; but as a physician I was right. As soon as the symptoms of abstinence disappeared, which ordinarily happens in a short time, the patients were satisfied to be cured, at least temporarily. When they relapsed, they never minded the former forced detention.

When a patient who has been admitted to hospital, or his relatives demand his release, there is plenty of time to verify the necessity of detention or the best way to handle the patient. However, it should always be the physician only or a board of physicians who decide whether or not the man must be kept in the hospital. The interference of unskilled laymen should never be tolerated.

Conclusion.—The experience in Cologne and other places teaches us that free admission to mental hospitals without delay, without formality, without papers, has proved its workability. It serves best the interests both of the patient and the public. It is the best way to eliminate once and—we may hope—for ever the prejudices against the mentally ill and the hospitals as well as against the psychiatrists.

IRRESPONSIBILITY OF JUVENILE DELINQUENTS [1]

D. A. THOM, M. D.,[2] BOSTON, MASS.

There exists a group of juveniles who commit serious offenses and homicide is fairly common among other crimes. Many of these offenders have been recognized over a period of years as being incorrigible. They do not profit from experience and invariably their offenses become more and more serious as they advance in age.

These non-conformists are, as a rule, fairly well endowed intellectually; they rarely suffer from any recognized type of mental illness. The court commonly regards them as having a normal mentality, classifies them as delinquents and treats them accordingly. Because of their youth they are allowed to drift from one offense to another. Early in their delinquent careers they are placed on probation, the case is filed, or their activity is interrupted by short reformatory sentences. Finally they commit some serious crime which awakens the public's righteous indignation and demand is made that something be done to prevent such atrocities. Criticism is hurled upon both the medical and legal professions by an outraged community. But this missionary zeal for a more intelligent plan of handling these cases soon subsides into apathy until the next crime is committed.

Such is the history of a group of youthful offenders that are constantly appearing in the courts all over the country.

The following case exemplifies the type of individual that is being considered in this discussion. The procedure followed by parents, clinics and courts is probably representative of what takes place in many states throughout the country in the handling of this type of case, being neither better nor worse than the medico-legal procedures in other states.

This example deals with a boy of fifteen arrested and indicted for the murder of a fifteen-year-old girl. On the day the trial was to have started he pleaded guilty to luring the victim into an unoccupied house and causing her death. This crime was one of the most atrocious in the state's history. The postmortem examination of the girl showed that at least three different weapons were used and that there were twenty-two different groups of wounds. It was suspected that the slayer had proceeded with the mutilation from day to day until the body was discovered. The victim's eyes had been gouged out, there were knife slashes under the eyes and several stab wounds about the chest, the entire skull was bashed in, and it appeared that earlier wounds were covered over by later blows. Further details are not necessary to indicate that the crime was committed by a sex pervert.

This boy's history portrays the evolution of his anti-social tendencies:

Born October 3, 1925. Birth and early development were normal.

3 years of age: Dick was recognized as a problem, was nervous, unstable and difficult to manage.

5-6 years: He had whooping cough and measles, the latter accompanied by convulsions, seven in a two-hour period. His stepsister, to whom he had been extremely attached, died. Dick did not know that his mother had been married previously and that her first husband had deserted prior to the birth of the daughter.

6-9 years: Dick did not get along well with his brother, six years his junior, and constantly pestered him to make him cry. There was also a girl eight years younger than Dick. He had been found putting salt and pepper in the baby's food. Other children were annoyed and irritated at him for the various mean and spiteful things he did. He always wanted to be the center of the stage, usually choosing as his companions those children who were easily led. During games he cheated and played unfairly. When he was in difficulties he managed to have his brother blamed for his misdeeds. All the children and adults in the neighborhood blamed Dick for anything that went wrong. He bit his fingernails.

At the age of nine he was badly bruised and suffered a broken septum bone when hit by a car.

9½-10½ years: He was referred to a child guidance clinic by the school nurse because of destructive and unmanageable behavior. He was doing fairly good work in school at this time, but later repeated the fifth grade. On a psychological examination he received an I. Q. rating of 91.

[1] Read at the ninety-eighth annual meeting of The American Psychiatric Association, Boston, Massachusetts, May 18-21, 1942.

[2] Director Habit Clinic for Child Guidance. Research Consultant for Massachusetts Department of Mental Health.

The family lived in a good residential section of a suburban town. Dick's father had steady employment as travelling salesman, and was home only on weekends. He was fond of the children but had little to do with their care and training.

Numerous examples of Dick's delinquencies were reported. While visiting a neighbor he broke a pair of glasses deliberately and twisted the rim. He was discovered to be using the money given him for music lessons for other purposes. Once he sent some boys to steal clothespins and then shouted to the neighbor that they were stealing. When punished by the teacher for disobedience at school, he beat up the smaller children on the playground. He "flipped girls' dresses up in the back" and poked them. He admitted mutual masturbation with other boys. In school he was lying, stealing and hitting other children for no apparent reason, sometimes children that he had never seen before. On one occasion sixteen boys came to the house explaining that they intended to beat Dick up for striking smaller children.

Mother felt that no method of punishing him was successful. He became resentful and destructive and might repeat the offense immediately afterward. According to mother, "the smile never left his face." He did not profit from experience; though he might ask her forgiveness at night and promise good behavior, in the morning his mischief was continued. He was not interested in anything for longer than a few minutes. He destroyed articles around the house and tore his clothes.

Dick's mother could neither explain nor control his behavior. He was considered willful, sly, domineering and utterly unreliable. The psychiatrist observed that he considered himself free of guilt in the situations in which he misbehaved.

The clinic recommended admission to a Study Home, but after the arrangements were postponed because of quarantine his parents changed their minds, stating that Dick had improved and that they didn't want him to associate with boys of a lower social and economic level. The case was closed thirteen months after opening, at which time the clinic felt that parents had gained little insight regarding handling Dick's problems.

12 years: He was brought to another guidance center. His parents complained that he was stealing and constantly getting into trouble, but they did not seem overconcerned about his behavior. Teacher reported several episodes of petty stealing and considerable lying. He was found to have average intelligence. He showed confusion of sex ideas which seemed to have originated about the time of the birth of the brother, and which seemed to be related to rivalry with him and to a compulsive type of stealing. There had been masturbation on the part of the two boys which mother had handled poorly.

After five months' contact it was felt that little could be done with the boy unless parents cooperated and treatment was more intensive.

14 years: Dick was examined at a state school for the feebleminded which reported that he had an I. Q. of 89. There was no mental defect or evidence of psychosis.

14 years, 4 months: He went to live with a relative in a nearby town, but was expelled from the school there after pushing a girl. The case was dismissed in court for insufficient evidence. Having returned to his own home, he continued to be a problem, stealing, defacing property, and writing obscene words on walls and in school books.

14 years, 9 months: Dick was again charged with assault for pushing a girl off a bicycle, and was put on probation.

15½ years: His school guidance teacher asked that he be treated again by the guidance center which had known him previously.

15 years, 9 months: He assaulted a girl and slashed her about the face so that sixteen stitches were required; the assault was considered sexual in character. He was charged with assault and attempt to rape, and released on bail pending trial in higher court. The family was urged to take some action for the protection of society and the boy, whether he was found guilty or not, as the situation was felt to be critical.

15 years, 10 months: He was charged with one of the most atrocious murders in the history of the Commonwealth.

At the request of the Clerk of Court to the Commissioner of Mental Health, a psychiatric examination was made, under Chapter 123, General Laws, Section 100A:

Whenever a person is indicted by a grand jury for a capital offense or whenever a person, who is known to have been indicted for any other offense more than once or to have been previously convicted of a felony, is indicted by a grand jury or bound over for trial in the superior court, the clerk of the court in which the indictment is returned, or the clerk of the district court or the trial justice, as the case may be, shall give notice to the department of mental diseases, and the department shall cause such person to be examined with a view to determine his mental condition and the existence of any mental disease or defect which would affect his criminal responsibility. . . . . The department shall file a report of its investigation with the clerk of the court in which the trial is to be held, and the report shall be accessible to the court, the probation officer thereof, the district attorney and to the attorney for the accused. . . . .

Psychiatric Examination

(The formal report was submitted to the Clerk of Court, according to the law, and stated that the accused was not insane or feebleminded but was a constitutionally unstable individual.) The following is, in substance, a supplementary report rendered the

District Attorney who had the prosecution of the case under his supervision:

It is the opinion of the two psychiatrists [3] who made the mental examination that this boy could not be considered as having any specific type of mental disease or mental defect which would have fallen within the legal definition of insanity; that is, there was no evidence of delusions, hallucinations, or other definitely psychotic symptoms, nor was there evidence of any impairment of his intellectual equipment.

There was, however, no question in the minds of the examining psychiatrists that he was suffering from a constitutional developmental defect which affected his feelings and his sensitivity towards others, impaired his judgment, and detracted from the inhibitory forces which are common and natural to normal individuals. Although one of his type realizes and understands that it is wrong and prohibited by law to participate in aggressive acts against society, he does not experience within himself any revulsion toward the pain and suffering which his behavior, precipitated by cruel and perverted appetites, would cause others. In fact, it may be said that he actually experiences a feeling of satisfaction in inflicting pain. This lack of sensitivity and the absence of feeling tone toward others is quite as definite in these cases as is the impairment of intellectual endowment that results in feeblemindedness. Such "constitutional psychopaths" do not profit from experience. They are given to impulsive outbursts and their behavior is quite unpredictable and without premeditation. As we who are familiar with these cases are well aware, all types of asocial behavior may result.

This boy prayed and repented at night as a way out of some difficult situation, but before breakfast would resort to cunning, trickery and cruelty. He has been looked upon as a problem child by his mother since he was three years of age.

I have attempted to describe briefly a personality type that cannot be considered legally insane, but one that is socially irresponsible, representing a dangerous menace to the community. The recognition of the irresponsibility of this group of offenders by the legal profession and by society would do much toward preventing a repetition of these horrifying tragedies. One should not lose sight of the fact that society also has the responsibility of protecting such individuals against their own constitutional defects.

So far, neither the law nor medicine has devised a rational method of caring for these individuals. Psychiatry has, however, developed to the point where we are able to recognize the type and can recommend their segregation from society. It is regrettable that there exists at the moment no legal machinery for bringing this about. We are forced to wait until some type of criminal behavior actually occurs before legal action can be taken. Because of their youth, these individuals have their cases filed, are placed on parole, permitted freedom on bail, or allowed through other legal devices to be at large. Of course, such procedures serve no useful purpose. Until we know more about these social misfits society should be protected at all times from their cruel, sadistic, perverted behavior. They are cases which should never be considered suitable for pardon. They do fairly well under strict supervision but revert to type when the opportunity presents itself and restraint is lifted.

In conclusion I would say, if it is not too presumptuous, that this boy should be considered from the medical and social point of view as an irresponsible individual, for the reasons outlined. There is no reason to expect that the constitutional defects which account for his irresponsibility will ever be eradicated by time or treatment. Society is entitled to absolute and permanent protection from his type.

Finally, there is a crying need for the legal and medical professions, in cooperation with the legislature and an enlightened public press, to exert all pressure in an untiring effort to have enacted a law which will permit of the recognition of irresponsibility that does not now fall within the narrow confines of our legal definition of insanity.

As previously stated, on the day the trial was to have started the defendant plead guilty to murder in the first degree and the court having no other alternative, he was sentenced to death. An appeal was made by the prisoner's attorneys to the Governor for a commutation of the death sentence to life imprisonment. The Governor then appointed the Attorney General, the District Attorney, who had the prosecution of the case in charge, and the Commissioner of Correction to review all evidence pertaining to the crime and requested that a report be submitted to the Governor and his Council for their consideration. After this report was reviewed by the Council, they voted five to four that the defendant's sentence be commuted from the death penalty to that of life imprisonment.

The nature of the crime was so atrocious and the victim so young (15 years of age) that public indignation ran high, not only in the community where the crime was committed but throughout the state. On the other hand, the age of the prisoner and the abnormal and perverted elements which characterized the crime indicated that the prisoner must have been suffering from some peculiar mental twist, and it was not in keeping with the humanitarian ideas of our present state of civilization that the ends of

[3] The examination was made by Dr. A. Warren Stearns, Boston, Mass., and the author.

justice would have been served in electrocuting this boy. Therefore the decision of the Governor and his Council to commute the death sentence, which was in keeping with the recommendation submitted by the committee making the study of the evidence, was accepted by the public without criticism.

It is not a matter of great importance just what course the state decided to pursue in the punishment of this individual criminal except as it might reflect upon the progress which society has made in its attitude toward crime and the criminal, which is, of course, a matter of more than philosophical interest. It is, however, an issue of great import as to the future attitude that should be taken by the community and the medical and legal professions toward these irresponsible juvenile delinquents.

There has been little disposition on the part of the judiciary to recognize mental abnormalities other than frank mental disease and obvious feeblemindedness as a mitigating factor in the commission of crime. The accused's irresponsibility can be established only if his state of mind is such that it falls within the narrow definition of insanity as laid down by the law.

"Does the accused know the difference between right and wrong?" still remains the standard criterion for legal responsibility in most courts. Delusions, hallucinations and intellectual deterioration resulting in conduct so peculiar, eccentric and bizarre that it can be recognized by the policeman or the janitor are still essential to establish a status of legal insanity in most courts. The judiciary seems to be still unmindful of the fact that 95 per cent of all patients committed to state institutions for the insane are able to recognize the difference between right and wrong. As a matter of fact, it takes but a few months of training to teach a dog that certain types of conduct are approved while others are disapproved. Yet we continue to find the legal profession clinging tenaciously to these outworn criteria of human responsibility.

Notwithstanding the failure of the courts to be concerned about the mental responsibility of a large group of individuals who persist in committing repeated offenses and who do not profit from experience, and although consideration is rarely given to the available information pertaining to the mental status when these offenders are brought before the court, those interested in the medical aspects of these legal situations have carried on in a passive sort of way. They have taken advantage of the opportunity, when it arose, to impress those in authority with the importance of determining the responsibility of the offender before planning for his punishment, as well as the protection of society.

It has unfortunately developed into a rather common practice for the psychiatrist, when confronted with the task of rendering a medical opinion with reference to these juvenile offenders who have committed serious offenses, not to quibble about the diagnosis or perhaps the more technical points of the law, but to take the stand that for all practical purposes these constitutional psychopaths should be considered irresponsible. The only way of permitting them to be so recognized by the court is that of making a definite statement that they are insane according to the legal definition. This procedure relieves the prosecuting attorney of the unpleasant task of trying a juvenile offender for a crime of such a serious nature that the penalty would be so severe as to offend public opinion. At the same time it permits the attorney for the defense to make a satisfactory compromise for his client and, in so far as it is possible, the solution of a difficult and embarrassing problem has been reached.

However, this method of procedure serves no useful purpose when it comes to protecting the public from the ravages imposed by these irresponsible offenders, because it is only after some serious offense has been committed that the Court is willing to recognize and accept mental aberration as a factor in criminal responsibility.

A strong feeling has been developing over a period of years that the medical and legal professions should get together, pool their interests and assets, throw away professional animosity, and make a concentrated effort toward protecting society against these irresponsible offenders, regardless of their age. The medical profession should not be called upon to pull the chestnuts out of the fire when, through ignorance, carelessness or

indifference, legal procedures have allowed society to become the victim of individuals suffering from criminal propensities due to mental aberrations which have been recognized for months, and even years, before the crime has been committed.

It is with this thought in mind that the examining psychiatrists held fast to the legal concept of insanity when reporting upon the case under discussion. When the report was submitted that the accused was not insane and not feebleminded, yet irresponsible, a situation was created. This departure from the usual method in dealing with such cases represented an effort to call the attention of the judiciary emphatically to the fact that society cannot adequately be safeguarded from the many irresponsible and dangerous criminals under the statutes of many of these United States as they exist today.

The time has arrived when the mental status of all our juvenile offenders should be determined, and an intelligent plan should be made to protect the public from the atrocities which result from mental aberrations and to see that these individuals are segregated and studied from every possible angle in order that we may eventually know something about the factors and forces combined to create the perpetrators of some of our most vicious crimes.

Conclusion

1. The constitutional psychopath or the psychopathic personality represents the most difficult group of all the mentally sick individuals with which the medical and legal professions have to deal. Particularly baffling are those psychopaths who show evidences of perversions in relation to their sexual drives.

2. The psychiatrist is in a position to recognize in many instances during the preadolescence years definite tendencies for these unstable children to incorporate into the framework of their disintegrated personalities sexual anomalies which are significant and have grave implications.

We recognize that such individuals are not governed by the same inhibiting forces as the normal individual. They are impulsive, cunning, and unpredictable. They have no regrets, remorse, or sense of guilt about their asocial activities. They do not profit from experience, they are not restrained by punishment, and up to the present time they do not improve under treatment.

3. The case presented is an example of the personality type which is in need of serious consideration from both the medical and legal professions.

4. There seem to be two vitally important points which have not, as yet, been given sufficient consideration by those interested in psychiatry and criminology.

(a) A statute should be enacted which would permit or require the court to have those suspected of sexual psychopathy submitted to psychiatric examination by two qualified psychiatrists in order to determine their responsibility. If the evidence of this examination is of such a nature as to convince the court of their irresponsibility because of sexual psychopathy they should be sent to an institution providing care for this type of individual.

(b) The fact that no such institution exists at the present time brings up the need of providing an institution so organized that a thorough study might be made from every possible angle, medical, psychological, psychiatric. Let us turn our battery of tests on these individuals, study their behavior under strict supervision or modified supervision, but always supervision, until we have some assurance that they will not return to society only to repeat more serious offenses.

DISCUSSION

Dr. Sheldon Glueck [Cambridge, Mass.]—Dr. Thom's paper entails the basic question, what facilities exist in society for the early recognition of persons who are probably destined to develop into dangerous sexually-sadistic criminals?

The answer involves, first, legislation, and, secondly, institutional facilities for the study and treatment, or at all events, control of such persons. I find myself in essential agreement with Dr. Thom's views, although I approach the issues from the standpoint of a criminologist and lawyer, rather than a psychiatrist. As to legislation, Dr. Thom has mentioned the most advanced statutes in this field. It will be noticed that such legislation requires the prior commission of a crime—usually a dangerous, aggressive sexual act, or even an

habitual course of such acts—before the machinery for putting the commitment provision into force can be set in motion. While the very recognition of psychopathic personality as a form of mental abnormality which requires hospitalization for as long a period as the person remains socially dangerous is in itself a radical advance, such provisions might nonetheless be called lock-the-door-after-the-horse-is-stolen legislation.

At least four states—California, Illinois, Michigan, and Minnesota—have thus far enacted special laws for the hospitalization, through commitment proceedings, rather than criminal procedure, of sexually aggressive psychopaths. When research criminologists used to recommend the establishment of special provisions for the commitment and treatment of psychopathic offenders rather than their trial and punishment as fully responsible criminals, a major objection to such proposals was the alleged difficulty of defining the concept sufficiently clearly for legal purposes. While it is too early to say definitely, as yet, it would seem that existing legislation has coped quite satisfactorily with this problem. The California statute defines the category envisaged by the Legislature, as follows:

"As used in this chapter, 'sexual psychopath' means any person who is affected in a form predisposing to the commission of sexual offenses against children, and in a degree constituting him a menace to the health or safety of others, with any of the following conditions: [a] mental disease or disorder, [b] psychopathic personality, [c] marked departures from normal mentality."

It will be seen that from a psychiatric point of view the definition is not strictly accurate, overlapping as it does both the psychoses and feeblemindedness, and not sufficiently defining the concept of psychopathic personality which it sets out to define. Since the chief motive of this legislation is to protect against sexual aggression, however, the definitions in the act are at least partially adequate for legal purposes.

The Illinois statute, with more psychiatric accuracy, defines the category as follows:

"All persons suffering from a mental disorder, and not insane or feebleminded, which mental disorder has existed for a period of not less than one [1] year, immediately prior to the filing of the petition . . . . coupled with criminal propensities to the commission of sex offenses, are hereby declared to be criminal sexual psychopathic persons."

The Michigan definition is much like that of Illinois. Probably the most convincing definition to this audience is that of the Minnesota statute which approaches most closely the psychiatrist's view of the subject:

"The term 'psychopathic personality' as used in this act means the existence in any person of such conditions of emotional instability, or impulsiveness of behavior, or lack of customary standards of good judgment, or failure to appreciate the consequences of his acts, or a combination of any such conditions, as to render such person irresponsible for his conduct with respect to sexual matters and thereby dangerous to other persons."

I might add, although this word "irresponsible" has not yet been construed, I think that the courts would indicate that irresponsibility from a psychiatric and social point of view rather than from the strictly legal point of view is intended in this particular statute.

In an interesting decision of the United States Supreme Court (Minnesota *ex rel.* Pearson *vs.* Probate Court of Ramsay County *et al.*, 309 U.S. 270, 1940), the constitutionality of the Minnesota Statute was upheld. The contention had been made that the statute is "too vague and indefinite to constitute valid legislation."

The United States Supreme Court, being constrained to accept the State Supreme Court's construction of the statute, refused to interfere with the following construction by the Minnesota tribunal:

"Conceding that it is imperfectly drawn, the statute is nevertheless valid if it contains a competent and official expression of the legislative will. . . . . The language of Sec. 1 of the Act is intended to include those persons who by an habitual course of misconduct in sexual matters have evidenced an utter lack of power to control their sexual impulses and who as a result are likely to attack or otherwise inflict injury, loss, pain, or other evil on the objects of their uncontrolled and uncontrollable desire. It would not be reasonable to apply the provisions of the statute to every person guilty of sexual misconduct nor even to persons having strong sexual propensities. Such a definition would not only make the act impracticable of enforcement and perhaps unconstitutional in its application, but would also be an unwarranted departure from the accepted meaning of the words defined." (State *ex rel.* Pearson *vs.* Probate Court of Ramsey County and another, 205 Minn. 545, 554, 555, 1939.)

Speaking of the requirement of proof of an "habitual course of misconduct in sexual matters," which has shown "an utter lack of power to control sexual impulses," and, hence, that such persons "are likely to attack or otherwise inflict injury, loss, pain or other evil on the objects of their uncontrolled and uncontrollable desire," the United States Supreme Court concluded that "these underlying conditions, calling for evidence of past conduct pointing to probable consequences are as susceptible of proof as many of the criteria constantly applied in prosecutions for crime . . . . appellant's criticisms are drawn from his interpretation of the statute and find no warrant in the statute as the State Court has construed it. Equally unavailing is the contention that the statute denies appellant the equal protection of the laws. The argument proceeds on the view that the statute has selected a group which is a part of a larger class. The question, however, is whether the Legislature could constitutionally make a class of the group it did select. That is, whether there is any rational basis for such a selection. We see no reason for doubt upon this point. Whether the Legislature could have gone farther is not the question. The class it did select is identified by the State Court in terms which clearly show that

the persons within that class constitute a dangerous element in the community which the Legislature in its discretion could put under appropriate control. As we have often said, the Legislature is free to recognize degrees of harm, and it may confine its restrictions to those classes of cases where the need is deemed to be clearest. If the law 'presumably hits the evil where it is most felt,' it is not to be overthrown because there are other instances to which it might have been applied."

The Court also held that the procedure provided for [even though it did not provide for jury trial] is not "invalid on its face," as inconsistent with due process of law (274-275).

All this reform legislation seems to have been stimulated by the accident of the occurrence, in close sequence, of a number of particularly revolting sexual crimes; but the legislation doubtless is an entering wedge to the later decriminalization of other behavior categories of psychopaths at present dealt with by criminal law and procedure. Hence these few statutes are of an importance far beyond the immediate problems they deal with; for they contribute to the breakdown of the criminal law's traditional attitudes of blameworthiness and painful punishment. Instead of the typical criminal trial, a hearing is provided for as in the case of the non-criminal insane, upon the testimony of trained psychiatrists whose qualifications are carefully set forth in the California and Illinois statutes. The Minnesota law provides merely that the "court shall appoint two duly licensed doctors of medicine to assist in the examination of the 'patient.'"

Of the argument that under this provision "these doctors may not be sufficiently expert in this type of cases," the United States Supreme Court said that it "merely invites conjecture. There is no reason to doubt that qualified medical men are usually available" (276). However, some such more specific provision of qualifications as appears in the California and Illinois enactments is clearly to be preferred. The California provision is:

"The judge shall appoint not less than two nor more than three psychiatrists, each of whom shall be a holder of a valid and unrevoked physician's and surgeon's certificate, who has directed his professional practice primarily to the diagnosis and treatment of mental and nervous disorders for a period of not less than five years, and at least one of whom shall be from the medical staff of a state hospital or county psychopathic hospital."

In the hearing that takes the place of a criminal trial, the defendant's rights are fully protected. Commitment to a hospital for as long as may be necessary for therapeutic and protective purposes takes the place of fixed or only partially indeterminate prison sentence, followed, automatically, by release, that is so typical of criminal proceedings.

I said that one weakness of the pioneer statutes just described is that the commission of a serious sexual offense or, as interpreted by the courts in the Minnesota statute, even an habitual course of such acts, is required before commitment proceedings can be instituted. This brings me to the second aspect of the problem—the institutional equipment for coping with such persons. This may be divided into clinics and various correctional establishments and processes.

What can be expected of clinics? At the most, very careful diagnosis based not only upon a single or two interviews, but, where indicated, upon a period of observation and the application of various tests. Our clinics are essentially diagnostic. They can be therapeutic only if supplemented by appropriate facilities, including long-term institutional care. They are strategically placed for the early detection of aberrant instinctual and acquired behavior tendencies. However, unless juvenile courts are empowered to deal effectively with predelinquents, and unless judges are informed as to the psychiatric implications of their day-to-day work, difficulties of the kind mentioned by Dr. Thom in the cases he discussed are bound to arise; and society remains ineffective before the threat of very dangerous behavior.

There is one approach which I believe clinics have not yet made, namely, the bringing to bear upon each case of the systematically organized and objectified experience with hundreds of similar cases in the past, through the use of prediction tables as instruments of prognosis. It is probable that the prognoses which psychiatrists today make might be improved by the construction of such tables which correlate certain factors in the biologic makeup and social background of various classes of persons with their subsequent behavior. A method for doing this, developed by Dr. Eleanor T. Glueck and myself, is described in the various researches upon which we have reported, particularly the works published under the titles of *Later Criminal Careers*, in 1937, *Juvenile Delinquents Grown Up*, in 1940, and our latest work to be published early this fall by the Commonwealth Fund.

Unquestionably, in order to catch more future delinquents and criminals at an early and manageable stage in their careers, mental hygiene clinics must be set up in every community as part and parcel of its indispensable health resources. So much for clinics.

As to treatment establishments, it is no secret that existing facilities for the treatment of "defective delinquents" are a great disappointment. We must see to it that the same will not be true of those which will sooner or later have to be set up for psychiatric delinquents. In the first place, such establishments ought properly to be under the direction of the State Department of Mental Health, rather than the Department of Correction or Prisons. Secondly, they ought to be staffed with the very finest quality of research and therapeutic brains. The research and therapy establishments called for by this problem ought to be the advance-guard laboratories in the study of the aberrations of human motive, attitude and behavior. Instead of their being relegated to the rôle of Cinderella in the penal hierarchy, they ought to be given the very best in equipment and personnel in the mental hygiene field.

Again and again society has put its faith in some new piece of legislation as a cure-all, ignoring the vital fact that, for it to be successful in practice, the new reform—be it the juvenile court, the sentencing or treatment tribunal, the parole board, the probation service, or the institution for defective delinquents—requires first and foremost personnel of the proper training and outlook. Otherwise, the new reform legislation is likely to become just one more gadget to be used by politicians as a happy hunting ground for new appointments made in payment of political debts.

Finally, one cannot too often repeat the need of systematic education of the public, legislators and officers of criminal justice, in the elements of mental hygiene and psychopathology. This is the only way in which we can win support for fundamental reforms that have been held back by centuries of blind tradition and outworn theologic-psychology. Moreover, it is the only way in which the public and judges will come to realize that even the trained psychiatrist, psychologist, endocrinologist and educator cannot be expected to effect "cures" in 100 per cent of the cases of delinquents and criminals by the day after tomorrow.

For we are really just beginning to explore the dark continent of the mind; and just as the public has been brought to see that scientists can justifiably study and experiment for many years in methods for the cure of cancer, so must they be taught that the highest immediate value to be achieved by the psychiatric approach to the control and improvement of human conduct is an attitude of understanding and experimentation rather than one of blameworthiness and blind condemnation. As a symbol of the new and more wholesome approach to these problems, the work of Dr. Thom in collaboration with our local prosecutors and judges, on the one hand, and parents and educators, on the other, deserves commendation.

COURSE IN MILITARY NEUROPSYCHIATRY [1]

ROY D. HALLORAN, M.D. AND PAUL I. YAKOVLEV, M.D.

Waltham, Mass.

The experience of the last war embodied in Volume X of the Surgeon-General's report [2] clearly reveals the importance of neuropsychiatry in military medicine. The present war will no doubt provide further proofs of its importance. Military neuropsychiatry differs from civilian neither in subject matter nor in principles of thought but in objectives and emphasis on certain special topics peculiar to military experience, especially during war. One of the foremost objectives of military neuropsychiatry is the segregation of the unfit and rational disposition of the soldier-patient in terms of his future usefulness as a soldier. In other words, the objective is tactical as well as medical. In military life emphasis falls upon the emergency nature of the diagnostic and therapeutic problems and upon the practical importance of the rôle played by exogenous factors in the large proportion of the neuropsychiatric disabilities. These objectives and special emphasis, therefore, definitely raise the important question of additional medical training for those who have to handle selections *for* service as well as neuropsychiatric casualties occurring *in* service.

The regular medical staff of the peacetime army in time of war forms only the nucleus of the medical corps. Large numbers of physicians are recruited from civil life to form the bulk of the medical personnel. In peacetime neuropsychiatry is practiced by those who choose this field of their own accord after a measure of preparatory training. This is not quite true in military services. A physician becoming a medical officer in the army by definition is not a specialist. He cannot choose which branch of medicine he will practice, although he may be fortunate in a special assignment for which he is trained. He must be prepared to handle neuropsychiatric problems in line of duty along with all other medical problems. Even if all the trained neuropsychiatrists available in the country were drafted for special service, the neuropsychiatric work would still have to be practiced by medical officers who for the most part have had little or no formal training in neuropsychiatry. Furthermore, even the medical officers possessing a measure of neuropsychiatric experience acquired in conditions of peacetime training and practice are not often familiar beforehand with the objectives, the practical exigencies and special problems emphasized during war. Therefore, one would seem justified in assuming that reasonably short and easily accessible courses judiciously designed to cover the most important practical aspects of military neuropsychiatry should be both useful and timely for the large numbers of medical officers called into service. How such courses should be organized and what their program should be are questions which we should like to present to this Association by a brief account of our own venture in this field.

Early in 1941, because of the imminence of war, we requested several leading neuropsychiatrists who have collaborated with us since 1936 in the development of the annual Metropolitan seminars in neurology and psychiatry [3] to express their opinions as to the advisability of re-organizing these seminars to include lectures on topics of military interest, either as a part of the general program or as a separate semester in military neuropsychiatry. Drs. C. Macfie Campbell, Stanley Cobb, H. H. Merritt, Abraham Myerson, Harry C. Solomon, and several others felt that such a step would be timely and assured us of their cooperation. We decided, therefore, to adapt the program as

[1] Read at the ninety-eighth annual meeting of The American Psychiatric Association, Boston, Massachusetts, May 18-21, 1942.

[2] The Medical Department of the United States Army in the World War. Vol. X, Neuropsychiatry. U. S. Government Printing Office, 1929, Washington, D. C.

[3] Post-Graduate Seminars in Neuropsychiatry for State Hospital Physicians (A discussion of "Teaching and Research in State Hospitals" by Drs. Franklin G. Ebaugh and Charles H. Rymer), Am. J. Psychiat., Nov. 1939, Drs. R. D. Halloran and Paul I. Yakovlev.

a separate semester of the regular seventh seminar in neurology and psychiatry.[4]

The entire course in military neuropsychiatry was presented largely as an experiment. No effort was made to contact local military authorities or otherwise publicize the course among interested physicians. The course, as in the case of the annual seminars was made available gratis to the customary group of physicians in the Massachusetts state hospital service and to others practicing the specialty in Massachusetts and surrounding states. The class consisted of twenty-eight physicians, only nine of whom were medical officers, and the latter were able to attend the lectures only when their duties would permit. The program (page 340) of this semester consisted of twenty-six lectures on the following subjects:

I. Psychometric, psychiatric and neurologic examination of recruits with emphasis on the detection of commoner neuropsychiatric defects in young adults (four lectures).

II. Clinical psychiatry and neurology, including discussions of such problems as the feebleminded of draft age, defective delinquents, sexual perverts, habitual alcoholics and drug addicts in military services; acute psychoses and acute confusional states; epilepsy, fits and paroxysmal neuropsychiatric syndromes in military services; war neuroses based on the last war; the effects of high explosives including a critical discussion of so-called "shell shock"; and military laws and regulations pertaining to disposition of neuropsychiatric cases (nine lectures).

III. Field neurology with special emphasis on the immediate care of peripheral nerve, spinal cord and craniocerebral injuries, including brief reviews of the applied anatomy and physiology; epidemiology, diagnosis and management of meningitis and of encephalitis in large troop concentrations (eight lectures).

IV. In addition, five lectures were given on miscellaneous topics having a practical bearing on military neuropsychiatry such as physiology of fatigue, criteria of endurance, physiology of flying with special reference to the effects of high altitudes on psychic functions, aviation medicine with reference to prevention and treatment of accidents among flying personnel, effects of modern warfare on civil population as shown by the experience of Great Britain and Europe, and the rôle of applied psychology in modern warfare.

The subject matter of these lectures was recorded stenographically, edited by one of us in collaboration with the respective lecturers, and is to be issued in the form of a private publication.[5] This was made possible in part through a grant-in-aid from the Division of Medical Sciences of the Rockefeller Foundation. We should like to acknowledge here the collaboration of leading neurologists and psychiatrists who carried the burden of teaching.

This experience has furnished us with valuable information for the future organization of such courses. We feel, for example, that the clinical experience with actual case material in the special services of large hospital units is essential and that a six-week course would permit the more adequate presentation of important subjects. Therefore, we have *tentatively* formulated a course in military neuropsychiatry which we believe should meet these requirements. (See tentative schedule—page 342.)

In a period of six weeks, a total of 224 hours would be available for instructions, not counting weekends. The first two weeks would be devoted to class lectures dealing with specific topics essentially as outlined in the program of the neuropsychiatric semester of the Metropolitan seminar conducted last fall with a few additional topics. The third week would be devoted to practical exercises, ward rounds and clinical lectures on selected topics on diagnosis and management of acute and chronic psychoses at a psychiatric hospital, preferably one having the facilities of an acute admission service. The fourth week would consist of practical exercises, ward rounds and clinical lectures on selected topics on diagnosis and management of psychoneuroses and of pertinent

[4] Announcement of the Seventh Postgraduate Seminar in Neurology and Psychiatry including A Review Course in Military Neuropsychiatry. Metropolitan State Hospital, 1941, Waltham, Massachusetts.

[5] Collected Lectures of the Seventh Metropolitan Seminar in Neurology and Psychiatry; First Semester: Military Neuropsychiatry, 1942, Waltham, Mass. (Privately printed.) Drs. R. D. Halloran and Paul I. Yakovlev.

METROPOLITA STATE H

SEVENTH SEMINAR IN NEUROLOGY AND PSYCHIATRY INCLUDIN A REVIEW
OCTOBER 3, 1941–APRIL 10, 194 WALTHAM,

I—MILITARY NEUROPSYCHIATR OCTOBER 3–

TIME	FRIDAY OCTOBER 3	FRIDAY OCTOBER 10
3:00 PM to 5:00 PM	1) *REGISTRATION* Introduction by *Dr. Roy D. Halloran*	7) *MILITARY NEUROPSYCHIATRY* Alcoholics and Drug Addicts in the Military Services. *Dr. Merrill Moore*
5:30 PM to 7:30 PM	2) *EXAMINATION OF RECRUITS* Detection of Commoner Neurologic Disorders in the Young Adults. *Dr. H. Houston Merritt*	8) *MILITARY NEUROPSYCHIATRY* Sexual Perverts. Pathological liars, Malingerers and Hysteria. *Dr. Abraham Myerson*
8:00 PM to 10:00 PM	3) *EXAMINATION OF RECRUITS* Detection of Commoner Psychotic and Neuropathic Traits *Dr. A. Warren Stearns*	9) *EXAMINATION OF RECRUITS* a) Detection of Commoner Neuro-opthalmic Defects *Dr. Benjamin Sachs* b) Detection of Commoner Neuro-otologic Defects *Dr. Philip E. Meltzer*
TIME	**MONDAY OCTOBER 6**	**MONDAY OCTOBER 13**
3:00 PM to 5:00 PM	4) *EXAMINATION OF RECRUITS* Practical Psychometric Tests *Dr. Frederick L. Wells*	10) *MILITARY NEUROPSYCHIATRY* Fits and Paroxysmal Neuro-psychiatric Syndromes in the Military Services. *Dr. William G. Lennox*
5:30 PM to 7:30 PM	5) *MILITARY NEUROPSYCHIATRY* Defective Delinquents and Criminals in the Military Service *Dr. A. Warren Stearns*	11) *MILITARY NEUROPSYCHIATRY* Acute Psychoses and Acute Confusional States in the Military Service. *Dr. A. Warren Stearns*
8:00 PM to 10:00 PM	6) *MILITARY NEUROPSYCHIATRY* Morons and Imbeciles of Draft Age. *Dr. Ransom A. Greene*	12) *MILITARY NEUROPSYCHIATRY* War Neuroses Experiences of 1914 - 1918 Lessons for the Current Emergency *Dr. Douglas A. Thom*

STATE HOSPITAL

A Review Course in Military Neuropsychiatry,
Waltham, Massachusetts.

(October 3—October 27, 1941)

FRIDAY OCTOBER 17	FRIDAY OCTOBER 24	FRIDAY OCTOBER 31
13) *MILITARY NEUROPSYCHIATRY* Breach of Discipline by the Insane and Neuropaths Functions of the Neuropsychiatrist with the Military Courts. Laws and Regulations on Com. & Discharge. *Dr. Malcolm J. Farrell Capt. M.C.*	19) *FIELD NEUROLOGY* Cranio-Cerebral Injuries *Dr. Gilbert Horrax*	25) *EFFECTS OF MODERN WARFARE ON CIVIL POPULATION* Experience of Great Britain and Europe. *Dr. D. Denny-Brown*
14) *FIELD NEUROLOGY* Applied Anatomy and Physiology of the Peripheral Nerves, Nerve Plexus and Roots *Dr. Maxwell MacDonald*	20) *MENINGITIS IN THE MILITARY SERVICES* Epidemiology-Diagnosis Management in Large Troop Concentrations. *Dr. Alton Pope*	26) *PHYSIOLOGY OF FLYING* General Bodily Effects Effects on Mental Function. Effects on the Apparatus of Proprioception, Equilibration and Vision. *Dr. D. Bruce Dill*
15) *FIELD NEUROLOGY* Applied Anatomy and Physiology of the Spinal Cord, Nerve Roots and Vertebral Column *Dr. Donald Munro*	21) *ENCEPHALITIS IN THE MILITARY SERVICES* Epidemiology-Diagnosis Management in Large Troop Concentrations. *Dr. Roy F. Feemster*	27) *AVIATION MEDICINE* Accidents of Flying Prevention and Treatment *Dr. Ashton Graybiel*
MONDAY OCTOBER 20	**MONDAY OCTOBER 27**	
16) *FIELD NEUROLOGY* Applied Anatomy and Physiology of the Cranium and its Contents Cranio-cerebral Topography *Dr. Gilbert Horrax*	22) "Shell Shock" and Effects of High Explosives *Dr. D. Denny-Brown*	
17) *FIELD NEUROLOGY* War Injuries of the Peripheral Nerves, Nerve Plexus and Roots. *Dr. Maxwell MacDonald*	23) *PHYSIOLOGY OF FATIGUE* a) Factors and Criteria of Endurance. *Dr. D. B. Dill* (1½ hrs.) b) *PHYSIOLOGY OF MARCH* Plantar Reflex as a Criterion of Endurance *Dr. P.I. Yakovlev* (½hr)	
18) *FIELD NEUROLOGY* War Injuries of the Vertebral Column and Spinal Cord. *Dr. Donald Munro*	24) *PSYCHOLOGY APPLIED TO MODERN WARFARE* *Dr. Leonard Carmichael*	

A TENTATIVE SCHEDULE OF A PROPOSED SIX WEEKS' COURSE IN MILITARY NEUROPSYCHIATRY

ROY D. HALLORAN, M. D., AND PAUL I. YAKOVLEV, M. D., WALTHAM, MASS., MAY, 1942.

98TH ANNUAL MEETING OF THE AMERICAN PSYCHIATRIC ASSOCIATION, BOSTON, MASS.

FIRST WEEK: ORIENTATION LECTURES ON TOPICS OF MILITARY NEUROPSYCHIATRY						
	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
9 to 11 a.m.	Registration	MILITARY NEUROPSYCHIATRY Mental Defectives of Draft Age	MILITARY NEUROPSYCHIATRY Defective Delinquents and Criminals	MILITARY NEUROPSYCHIATRY Sexual Perverts; Constitutional Psychopaths; Hysteria; Malingering	MILITARY NEUROPSYCHIATRY Alcoholics and Drug Addicts	ROUND TABLE CONFERENCE 9 to 12 a.m.
2 hr. recess						
1 to 3 p.m.	EXAMINATION OF RECRUITS Practical Psychometric Tests	EXAMINATION OF RECRUITS Detection of Commoner Neurologic Disorders	MILITARY NEUROPSYCHIATRY Epilepsy; Fits and Paroxysmal Neuropsychiatric Syndromes in Military Services	MILITARY NEUROPSYCHIATRY War Neuroses Experiences of 1914-1918	MILITARY NEUROPSYCHIATRY "Shell Shock" and Effects of High Explosives	
1 hr. recess						
4 to 6 p.m.	EXAMINATION OF RECRUITS Detection of Commoner Mental Disorders	EXAMINATION OF RECRUITS Detection of Commoner Neuro-ophthalmic and Otologic Defects	MILITARY NEUROPSYCHIATRY Acute Psychoses and Acute Confusional States in the Military Service	Psychology Applied to Modern Warfare	Laws and Regulations on Disposition of Neuropsychiatric Casualties	Weekend Recess
			ROUND TABLE CONFERENCE 7 to 9 p.m.			

SECOND WEEK: ORIENTATION LECTURES ON TOPICS OF MILITARY NEUROLOGY						
	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
9 to	FIELD NEUROLOGY Immediate Care, Diagnosis, and Management	FIELD NEUROLOGY	ROENTGENOLOGY Reading and Interpretation of X-ray Plates	ROENTGENOLOGY	PHYSIOLOGY OF FATIGUE Factors and Criteria	ROUND TABLE CONFERENCE

SECOND WEEK: ORIENTATION LECTURES ON TOPICS OF MILITARY NEUROLOGY

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
9 to 11 a.m.	FIELD NEUROLOGY Immediate Care, Diagnosis, and Management of Peripheral Nerve Injuries	FIELD NEUROLOGY	ROENTGENOLOGY Reading and Interpretation of X-ray Plates of Craniovertebral Injuries including Pneumoencephalo- and Ventriculography	ROENTGENOLOGY	PHYSIOLOGY OF FATIGUE Factors and Criteria of Endurance	ROUND TABLE CONFERENCE 9 to 11 a.m.
2 hr. recess						
1 to 3 p.m.	FIELD NEUROLOGY Immediate Care, Diagnosis, and Management of Spinal Cord Injuries	FIELD NEUROLOGY	Lumbar Puncture and Cerebrospinal Fluid	Encephalitides in Large Troop Concentrations Epidemiology, Diagnosis and Management	Physiology of Flying Effects of High Altitudes on Mental Function	
1 hr. recess						
4 to 6 p.m.	FIELD NEUROLOGY Immediate Care, Diagnosis, and Management of Craniocerebral Injuries	FIELD NEUROLOGY	Meningitis in Large Troop Concentrations Epidemiology. Diagnosis, and Management	Syphilis in Military Services with special reference to Diagnosis and Management of the lues of the C.N.S.	Aviation Medicine Prevention and Treatment of Accidents of Flying	Weekend Recess
			ROUND TABLE CONFERENCE 7 to 9 p.m.			

THIRD WEEK: CLINICAL INSTRUCTION IN GENERAL PSYCHIATRY

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
9 to 12 noon	Clinical Lectures in Selected Topics of Diagnosis and Management of Acute and Chronic Psychoses and Ward Rounds at a Psychiatric Hospital by Clinical or Medical Director and Associate Staff					ROUND TABLE CONFERENCE 9 to 12 a.m.
1 hr. recess						
1 to 5 p.m.	Practical Exercises on Clinical Psychiatry on Individual Case Material: Examination, Recording, Diagnosis, Laboratory procedures and tests of more general practical importance under direction of Associate and Resident Staffs of a Psychiatric Hospital					Weekend Recess
			ROUND TABLE CONFERENCE 7 to 9 p.m.			

TENTATIVE SCHEDULE—CONTINUED

FOURTH WEEK: CLINICAL INSTRUCTION IN PSYCHONEUROSES AND PSYCHOSOMATIC MEDICINE

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
9 to 12 noon	Clinical Lectures on Selected Topics of Diagnosis and Management of Psychoneuroses and Related Problems of Psychosomatic Medicine, and Ward Rounds at the Neuropsychiatric Service of a General Hospital, by Chief of Service and Associate Staff.					ROUND TABLE CONFERENCE 9 to 11 a.m.
1 hr. recess						
1 to 5 p.m.	Practical Exercises in Examination, Recording, and Diagnosis of Psychoneuroses on Individual Case Material under Direction of Associate and Resident Staffs of the Neuropsychiatric Service of a General Hospital					Weekend Recess
			ROUND TABLE CONFERENCE 7 to 9 p.m.			

FIFTH WEEK: CLINICAL INSTRUCTION IN GENERAL NEUROLOGY

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
9 to 12 noon	Clinical Lectures on Selected Topics of Diagnosis and Management of Organic Diseases of the Nervous System with emphasis on those common in young adults, and Ward Rounds at the Neurological Service of a General Hospital by Chief of Service and Associate Staff					ROUND TABLE CONFERENCE 9 to 12 a.m.
1 hr. recess						
1 to 5 p.m.	Practical Exercises in Clinical Neurology: Examination, Recording, Diagnosis, interpretation of laboratory tests on individual case material under direction of Associate and Resident Staffs of the Neurosurgical Service					Weekend Recess
			ROUND TABLE CONFERENCE 7 to 9 p.m.			

TENTATIVE SCHEDULE—CONCLUDED

SIXTH WEEK: CLINICAL INSTRUCTION IN THE CARE OF INJURIES OF THE NERVOUS SYSTEM

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
9 to 12 noon	Clinical Lectures on Selected Topics in Diagnosis, Immediate Care, and General Management of the Neurosurgical Diseases with special emphasis on Injuries of the N.S., and Ward Rounds at the Neurosurgical Service of a General Hospital by Chief of Service and Associate Staff					ROUND TABLE CONFERENCE and Adjournment
1 hr. recess						
1 to 5 p.m.	Practical Exercises in the Care and Management of Neurosurgical Diseases on Individual Case Material including demonstrations of Lumbar Puncture, Encephalography and of the minor Neurosurgical Procedures of Special Importance in Emergency Situations under direction of Associate and Resident Staffs of the Neurosurgical Service					
			ROUND TABLE CONFERENCE 7 to 9 p.m.			

problems in the field of psychosomatic medicine at a neuropsychiatric service of a general hospital. The fifth week would deal with the practical exercises, ward rounds and clinical lectures on selected topics of diagnosis and management of organic diseases of the nervous system in the neurological services of a general hospital, and the sixth week would be devoted to practical exercises, ward rounds and clinical lectures on selected topics on diagnosis, immediate care and general management of the neurosurgical diseases with special emphasis on injuries of the nervous system, including lumbar puncture, encephalography and minor neurosurgical procedures of importance in emergency situations on the neurosurgical services of a general hospital. During the course round-table conferences would be held twice weekly, for example, on Wednesday evenings and Saturday mornings. These would serve to stimulate and guide the class through a period of intensive work, to amplify and clarify the material covered, and to discuss assigned reading of military interest, and other pertinent topics. In this manner, after two weeks of a general preparatory review of the military neuropsychiatry, the medical officers will have a period of four weeks of a supervised and directed practical experience in the handling of the actual case material in the specialized hospital services.

The classes in our opinion should not exceed twenty-five medical officers. The teaching assignments for instructors should be small, not exceeding two or at the most three lectures per instructor. The subject matter of each lecture should be specific and restricted to a well-defined topic of practical military interest. The course might be repeated two or more times during a year. We believe that such courses could be organized in several large cities of the country where qualified teaching personnel and necessary neuropsychiatric hospital facilities are available, such as Washington, New York, Philadelphia, Baltimore, Chicago, St. Louis, Denver, San Francisco, and other regional academic centers. Thus, in the course of a year, several hundred medical officers throughout the country could receive a rapid and yet adequate instruction in practical aspects of military neuropsychiatry. In our opinion, these medical officers while receiving instructions should remain as a military unit on detached duty, under the direction of a medical officer. It is self-evident that the details of instructions should be established either in close collaboration with or by the military medical authorities. According to our understanding, it has been the practice in some army medical units to send a few medical officers at a time for short periods to various neuropsychiatric centers for training, and special training is also provided for them in Washington at the government hospitals. We believe, however, that the neuropsychiatric training of medical officers could be more effectively accomplished if special training centers were set up with a uniform program and more or less uniform organization.

We would caution against certain pitfalls in the organization of these seminars, especially overemphasis on the "post-graduate" or "advanced" character of courses in military neuropsychiatry. Neither is there any point in devoting time to technically specialized topics in the field of psychiatry and neurology such as special methods and theories of psychotherapy, neuropathology, technical roentgenology, tumor diagnosis, etc., for in the first place these topics will hardly be of sufficient practical importance in active military service during war. In the second place, a six weeks' course would be inadequate in these specialized fields. The purpose of the course is to focus attention on and to familiarize medical officers only with topics of practical importance.

SUMMARY

We have outlined our thoughts and experiences with a special one-month semester in military neuropsychiatry as a section of a general seminar. We feel that this brief experimental course helped to refresh both military and civilian physicians on subjects of special practical importance during war time. We also recognize its failure, because of insufficient time, to provide certain essential clinical experiences. However, we believe that a six-weeks' course comprising both lectures and clinics in general and psychiatric hospitals in active medical cen-

ters and organized in close collaboration with governmental authorities would rapidly extend the advantages of special training to a large number of military and civilian physicians. We have proposed such a course.

The strategic importance of improved standards of detection and treatment of neuropsychiatric disorders both among selectees and those already in service can hardly be exaggerated. Any practical method which will aid in such improvement, we believe, merits most serious consideration. These courses are short, practical and certainly offer at least one readily available means of broadening professional experience in the interests of greater military efficiency and more effective individual treatment, where the appropriate handling of large numbers living under special conditions of war is essential.

SOCIAL DATA IN PSYCHIATRIC CASUALTIES IN THE ARMED SERVICES *

ALEXANDER SIMON, M. D.,† AND MARGARET HAGAN ‡

Washington, D. C.

In a previous communication (1) a group of psychotic military men were studied with the purpose of determining if possible any specific data which could have been learned about them prior to enlistment which would demonstrate the inadvisability of induction of such persons into the service. In this presentation a similar but larger group was studied in more detail and this was compared with a group of selectees rejected and inducted. Colored men were excluded from the study. Several specific and objective factors were examined in particular. They were: 1. Previous mental illness. 2. Broken homes. 3. Psychosis in the family. 4. Education. 5. Occupational adjustment. 6. Antisocial behavior. 7. Alcoholism.

Four hundred psychiatric casualties, picked at random, 200 Army, 150 Navy and 50 Marine Corps men admitted to St. Elizabeths Hospital during the period from January 1, 1941, to January 1, 1942, were studied. Inasmuch as the Marine Corps men examined are served by the Medical Corps of the U. S. Navy, these two services were not considered separately in this study. These patients did not represent the total number of psychotic men in the military service during this period since many of them were discharged from service hospitals directly to their families or to state, or Veterans Administration institutions. Most of these men were voluntary enlistments and a small number (approximately 30) were inducted through Selective Service. Similar factors were studied in 788 men who received psychiatric examinations at the Selective Service examining stations. These factors were compared in the groups accepted and rejected.

The age range of the psychotic persons who broke down in military life was from 17 to 45 (Table 1); that of Selective Service was from 21 to 36.

TABLE 1

AGE

Age	Army	Navy
17-20	27	64
21-30	149	120
31-35	18	13
36-45	6	3

The diagnostic classification of the service men is as follows:

TABLE 2

DIAGNOSIS

Diagnosis	Army	Navy
Dementia præcox	146	155
Manic-depressive, depression	3	2
Manic-depressive, manic	9	12
Alcoholic psychosis	1	5
Psychosis with psychopathic personality	3	3
Psychopathic personality without psychosis	4	2
Psychosis with mental deficiency	7	1
Mental deficiency without psychosis	1	0
Paranoid condition	1	1
Psychoneurosis	0	3
Syphilis of the central nervous system	5	1
Posttraumatic psychosis	1	1
Psychosis with epilepsy	1	0
Undiagnosed psychosis	8	14

Of the 200 Army men 55 (27.5 per cent) had had one or more previous hospitalizations for mental illness or had been treated by a psychiatrist prior to enlistment; of the 200 Navy and Marine Corps men, 45 (22.5 per cent) (Table 3).

This would indicate that these men either were not asked or were untruthful concerning a history of previous mental illness. It has been our experience that one can more easily obtain the truth about this matter by direct interview rather than by any written

* Read at the ninety-eighth annual meeting of The American Psychiatric Association, Boston, Mass., May 18-21, 1942.

From St. Elizabeths Hospital, Washington, D. C.

† Senior Medical Officer, St. Elizabeths Hospital and Associate in Neurology, George Washington University Medical School.

‡ Field Director, American Red Cross.

standardized questionnaire. If hospital lists were checked most of these men would have been eliminated merely on this fact alone. These men enlisted for a number of reasons —to prove to their families and friends that they are "he-men"; often they are urged to enlist to help cure "what ails them" and occasionally to escape the shame of returning to the home community from a mental hospital. Usually they are recognized as mentally ill a few days or weeks after induction but a rare exception may continue for several years before a breakdown.

An example of the man who breaks down early in the course of his service is N. L., a 30-year-old selectee, who was inducted into the service on March 17, 1941. His family history was significant in that an uncle and aunt were definitely psychotic and three other members of the family probably were. He did well in school, and entered the Annapolis Naval Academy in 1927. In November, 1929, he suddenly became confused, tense, emotionally unstable, expressed vague paranoid delusions and suicidal ideas. It was felt that his reaction was schizophrenic but he was diagnosed as a neurasthenic and allowed to resign in January, 1930. For the next ten years he made a shifting occupational adjustment interspersed with three hospitalizations in state institutions for psychotic episodes, the date of his last discharge being January 15, 1940. He was inducted into the Army on March 17, 1941, and on April 26 he was admitted to the hospital because of his unkempt appearance and incongruous behavior and the expression of paranoid and grandiose delusions.

This man was a schizophrenic of about 10 years' duration with a history of at least four hospitalizations for his mental illness. The most cursory of psychiatric examinations should have excluded him.

Early in the investigation of these cases it was found that there was an unusually large number of broken homes in their backgrounds. The criteria for this factor were arbitrarily established to include homes in which one or both parents had died or in which the parents had been separated or divorced before the individual was 13 years of age and homes where both parents had bickered or wrangled to such a degree that the environment was equivalent to a broken home.

In this series 170 (42.5 per cent) of the men came from broken homes (Table 3). It is interesting to note that in conjunction with this factor there was often a history of behavior problems in childhood leading eventually to frequent arrests and chronic alcoholism. Frequently there was a history of psychosis in the members of the immediate family. This does not mean that if a man comes from a broken home he should be disqualified from service, but he should be scrutinized for personality deviations which might result from the disruption of a normal family setting.

TABLE 3

SOCIAL FACTORS

	Army (200)		Navy (200)		S. S. rejected (133)		S. S. accepted (613)	
Previous mental illness.	55	(27.5%)	45	(22.5%)	5	(3.7%)	0	
Arrests	30	(15.0%)	21	(10.5%)	36	(27.0%)	31	(5.1%)
Alcoholism	22	(11.0%)	19	(9.8%)	25	(18.8%)	0	
Broken homes	76	(38.0%)	94	(47.0%)	38	(28.5%)	96	(15.6%)
Psychosis in family.....	74	(37.0%)	67	(33.5%)	24	(18.0%)	35	(5.7%)

In order to obviate the fallacy of including vague indefinite neuropathic taints in the hereditary background of these men only definite psychoses requiring hospitalization and occurring in parents, siblings, aunts and uncles were considered. In this group 141 (35.2 per cent) of the patients gave a history of a psychosis in one or more members of the family (Table 3).

Since St. Elizabeths Hospital is primarily for the treatment of psychoses, mental defectives are not usually admitted unless they show evidence of a major psychosis. Of the 400 cases studied there were 8 (4 per cent) of psychosis with mental deficiency and one mental defective without psychosis. Every one of them could have been excluded merely on the basis of his educational history. For example, C. J., Army:

C. J., a 28-year-old man, enlisted in the Army August 8, 1940, because "I couldn't find anything else to do." This man's father, paternal uncle, and paternal grandmother were all patients in mental

hospitals. His mother died of "flu" when he was 15 months of age. He was able only to complete the fourth grade in school at 14. He worked as a farm hand or laborer. For a few weeks he was at a Civilian Conservation Corps Camp but deserted and returned home. On at least three occasions he has been arrested for drinking, fighting or vagrancy. In October, 1938, he was sent to a state hospital and remained till he was paroled on April 18, 1940, as a case of dementia præcox. Two months after his enlistment in the Army he was sent to the Station Hospital for mental observation because "he was unable to get along in his Company, picked fights and had a suspicious attitude and refused to eat." He scored seven years on the Stanford-Binet. It did not need a psychologist to determine that this man's intellectual capacity was insufficient for military duty.

An effort was made to study the occupational careers of these men, but it must be remembered that most of them were voluntary enlistments, many enlisting because they were out of work during a period when jobs were difficult to find. A history of vagrancy and shifting occupational adjustments was frequent and many came from rural communities where work was seasonal in character. A large number of these individuals had six months or more of duty in the Civilian Conservation Corps and apparently made good adjustments. However, the routine and discipline of the Civilian Conservation Corps is not comparable to the rigid character of military discipline. Moreover many of them were in the C.C.C. at an age where their schizophrenia was perhaps latent or incipient. It has not been the custom to question selectees concerning C.C.C. duty but this may be an important point to remember, for certainly if a man cannot make an adjustment in this comparatively simple environment he cannot in the Army or Navy.

J. C., a 22-year-old Army man, was admitted to an Army hospital because he was "obscene, tore up his clothing and exhibited peculiar behavior." Only then it was learned that his mother had been a patient in a mental hospital where she had been sent shortly after his birth, that he had been unable to keep a job because of his inability to avert "mischief and trouble," that after five months in the Civilian Conservation Corps in 1938 he was dishonorably discharged because of his inability to obey orders, that he was an habitual user of marihuana, that he had been hospitalized in a state institution for dementia præcox and that he was on parole when he enlisted on February 13, 1941.

A history of antisocial behavior was frequently observed in this group. In 51 (12.7 per cent) there was evidence of antisocial behavior sufficiently serious to come to the attention of civil authorities (Table 3). Arrests for traffic violations or a single arrest for alcoholism were excluded. In most cases diagnosed as psychopathic personality there was an invariable report of one or more arrests often with prison sentences. There were comparatively few cases of psychopathic personality without psychosis in this group as only psychotic cases are ordinarily sent to St. Elizabeths Hospital.

C. Y., a 19-year-old Army man, came from a family, most of whose members were addicted to alcohol. He frequently played truant from school, and although he insisted he graduated from high school, his mother confirmed that he never went beyond the sixth grade. The only employment he ever had was spasmodic work in his grandfather's welding shop. At the age of seven he began running away from home, a habit he continued intermittently. For several years he had been a marihuana addict. Innumerable times he had been arrested for stealing automobiles and once served a two-year prison sentence. In 1937 he spent several months in a state hospital for his drug addiction and was diagnosed toxic psychosis (due to marihuana) and constitutional psychopathic state. His mother in desperation finally urged him to join the Army on January 28, 1941. "I was at my wits end as to how to manage him and I thought the discipline in the Army would do him good." Two months later he borrowed a car and went absent without official leave. On his return he was placed in the stockade, brooded over his punishment, made a suicidal gesture and was placed in the psychopathic ward of the Station Hospital.

Of the 400 cases examined 41 (10.4 per cent) gave a history of using alcohol to excess prior to enlistment. We included here only those men who gave a history of frequent periodic sprees and those who had been arrested more than once for drunk and disorderly conduct and those whose alcoholism interfered with their occupational adjustment (Table 3).

Inasmuch as the present policy of the Veterans Administration gives favorable consideration to the pension claim of a man with more than six months' service unless there is positive evidence that the disability definitely existed prior to enlistment, it is most important to consider the duration of service of these men who become psychiatric

casualties (Table 4). It is interesting to note that 58.5 per cent of the men studied broke down within the first six months of military service (67.5 per cent in the Army; 49.5 per cent in the Navy). Even more striking

TABLE 4

DURATION OF SERVICE BEFORE HOSPITALIZATION

Period of service before hospitalization	Army		Navy	
1 day	1	(0.5%)	5	(2.5%)
2-30 days	48	(24.0%)	30	(15.0%)
1 mo.-6 mos.	86	(43.0%)	64	(32.0%)
7 mos.-12 mos. ...	18	(9.0%)	30	(15.0%)
1 yr.-3 yrs.	34	(17.0%)	34	(17.0%)
4 yrs.-10 yrs.	9	(4.5%)	28	(14.0%)
11 yrs.-21 yrs.	4	(2.0%)	9	(4.5%)

is the fact that 19.5 per cent of these men were hospitalized for mental symptoms within the first month of their induction into the service.

It is not a rarity for a man to display unusual mental symptoms on the first day of enlistment, for example, J. S., Navy:

J. S., a 17-year-old Navy boy, had exactly one day of active service before he was hospitalized on a psychopathic ward. One of his brothers is a schizophrenic and his mother, who is extremely religious, converses with God, has visions and has had fainting spells for eight years. At the age of 11 he attended a revival meeting and was "saved." During the next few years he lived for religion, eschewing all forms of worldly amusement, often conversing with God as did his mother. At 15 he began having fainting attacks and at 17 he thought he sinned by attending moving picture shows and going swimming on Sundays so he decided to enlist in the Navy as he felt it would do him good. His first day on active duty was very satisfactory but on the second day he had a fainting spell, woke up confused in sick bay, and then tried to jump out of a second story window.

At least this man displayed his first symptoms in military life soon enough to prevent much military effort being wasted on him; nevertheless he received Navy pay for two months and hospital care for that period.

A number of interesting observations were made about the psychiatric casualties studied. It has been noted that the schizophrenic symptoms displayed by many of the men in military life differ considerably from those seen in civilian practice(2). There are apt to be short, acute, excited and confused episodes which clear up rapidly once the patient is removed from the military environment. Certain of them have the features of what has been described as a "homosexual panic" and are characterized by homosexual conflicts with or without hallucinations of a sexual nature. Occasionally one observes that when the acute symptoms subside the patient tends to rationalize his illness on the basis that he "put on" the symptoms in order to escape from an intolerable situation. Where the service man suffers from manic-depressive psychosis it is usually of the manic type (Table 2). Because of the close supervision and the narrow restricted environment of military life unusual and bizarre behavior is apt to be noted immediately and hospitalization quickly follows.

Precipitating factors are numerous and do not fit easily into patterns. However, the man who is apt to end in the psychiatric ward of a Station Hospital may be: the man who goes repeatedly A.W.O.L., the somatic complainer, the soldier who cannot stand the social gap between a private and a private, 1st class, the man or officer who can't stand promotion, the man or officer who can't stand not to be promoted, the "mamma boys" who in peacetime (when there is no Selective Service) choose invariably the Navy and "blow up" promptly in the training station, the lonely, the homesick, the dependent, the timid, the one who never took an order in his life, the one who can't stand teasing, cursing and "dirty jokes," the one with a bad letter from home, the feeble-minded who had to stop forking manure for the cavalry and adapt to cutting grass, the alcoholic, the "bad actor," the unexpectant father who gets a letter from the girl who met the fleet, the boy who didn't know he was adopted until he went to get his birth certificate and who must find his own mother instead of fighting a war, the boy who wanted to study Diesel engines but was made a sergeant and had to keep drilling others, the reserve officer who thought the sergeant knew more than he did, the man or officer who knows better than his Commanding Officer how to win the war and finds him unresponsive, the man with psychotic episodes prior to service and the man whose best friend went down on his sister ship.

In order to compare the specific data obtained after the onset of psychosis in military

personnel with a similar age group in the general population, a study was made of identical data in 788 men examined for the Selective Service. A work sheet was prepared listing these data (Table 5).

Several psychiatrists collaborated in securing this information when examining selectees. There was of course the usual limitation in time and no outside social histories were available, the material being obtained directly from the men themselves.

Of the 788 men examined in the Washington, D. C., area, 175 (22.2 per cent) were rejected because of neuropsychiatric disability and 613 (77.8 per cent) were accepted. The diagnostic categories of the 175 rejected men were varied and are listed in Table 6.

TABLE 5

NAME ..... DRAFT BOARD ..... ORDER NUMBER ..... COLOR
Age ..... Education .....
Occupation ..... Type { Steady / Shifting }
Previous Military Service ..... Arrests .....
Barbiturates ..... Narcotics .....
Alcohol .....
Family History { Mental Illness / Broken Home / Before age 13 }
Previous Hospitalization .....
Head Injury ..... Unconscious .....
Convulsions ..... Enuresis .....
Venereal Diseases .....
Sex .....
Personality make up (and Intelligence) .....
Reasons for Rejection .....
Classification .....
Signed .....
Date ..... 1942.

TABLE 6

DIAGNOSIS OF SELECTIVE SERVICE REJECTIONS

Neurosis	66	(37.7%)
Schizoid	33	(18.9%)
Mental defect	27	(15.4%)
Psychopathic personality	15	(8.6%)
Chronic alcoholism	13	(7.4%)
Affect disorder	6	(3.4%)
Epilepsy	3	(1.7%)
Syphilis of central nervous system	2	(1.2%)
Other organic diseases	10	(5.7%)
Total rejected	175	(21.7%)
Total examined	788	

There was only a rare individual in this group who gave a history of previous hospitalization for mental illness, so well had the local draft boards screened them out. Since so much of the medical examinations of the local boards are now being left to the Army Induction Stations, the men with previous hospitalizations for mental illness are being seen much more frequently and it is probable that more of them will filter through than under the previous plan of double screening.

Among the rejected men 28.5 per cent came from broken homes, while of those accepted 15.6 per cent showed this factor. Of the rejected 18 per cent gave a history of one or more relatives having a psychosis requiring hospitalization as compared to 5.7 per cent in the accepted men. There was of course no history of chronic alcoholism among the accepted men, but 18.8 per cent of the rejected were excessively alcoholic. Twenty-seven of the disqualified had a history of one or more arrests but only 5.1 per cent of the accepted men gave such a history and this was usually for a single arrest on a drunk and disorderly charge (Table 3). All 15 men diagnosed as psychopathic personality, except for two homosexuals, gave a history of two or more arrests, usually on serious charges. All 13 men diagnosed as chronic

inebriety gave a history of 2 to 15 arrests on charges of drunk and disorderly conduct.

The variation in rate of disqualification among different examiners has been considerable even when the selectees came from a homogeneous group. The criteria for rejection, not strictly defined at best, vary with the different examiners depending on their training, experience and personal point of view. While the psychiatrist may be justified in making a diagnosis of neurosis in an individual case it is often a nice question for him to decide whether induction into military service will help this person to solve his individual problems or will exaggerate them. Malingering as such is rare and has usually occurred in individuals of low intellectual endowment. However, "skrimshanking"(3) as the English say is fairly common. "Skrimshanking" is making the most of symptoms one already has, in contrast with malingering, which is deliberately inventing symptoms which one has not. It is for the psychiatrist to decide whether this tendency on the part of the selectee will continue in the service or whether it is used as a temporary expedient to avoid induction.

It has been the experience of one of us as a Medical Examining Board psychiatrist that most of the cases referred to him required merely a rubber stamp of approval for rejection, they were so obvious. Often the cause for referral is not the reason for rejection. For example, a man was referred for examination because his brother was a patient in a mental hospital, whereas the man himself had had 20 arrests for alcoholism and several hospitalizations for delirium tremens.

CONCLUSIONS

If five objective social factors (previous mental illness, broken homes, psychosis in the family, arrests and alcoholism) are studied in a group of military personnel who become psychotic it is significant that 72.2 per cent of them have one or more of these factors present and over 12.0 per cent have three to five of them (Table 7).

Of the 175 men rejected by Selective Service, if 42 cases of mental deficiency, epilepsy, organic disease of the central nervous system are excluded, there will remain 133 so-called "functional" cases. Of these 133 (63.0 per cent) displayed one or more of the factors we have mentioned. Of the 613 men accepted only 147 (24.0 per cent) had one or more of the factors.

It has been our experience that the use of the written questionnaire in obtaining even such simple data as we have described is of little value. Men deliberately tend to falsify in such a questionnaire, while a skilled interviewer whether he be a psychiatrist or not will be more likely to obtain correct information.

It is not implied that the presence of one or more of these factors should necessarily lead to disqualification although it is evident that a history of previous treatment for mental illness, or of frequent arrests or excessive alcoholism should be sufficient for rejection. The presence of a broken home or psychosis in the immediate family should point to a little more extended psychiatric inquiry than in the average case. It is our firm belief that social workers or trained volunteers could be utilized to great advantage to obtain this information, as well as data about education, convulsions and enuresis, before a man is examined. Where these data are positive it would furnish leads for the psychiatrist.

TABLE 7

FREQUENCY OF SOCIAL FACTORS

	One or more		None	
Army (200)	137	(68.5%)	63	(31.5%)
Navy (200)	152	(76.0%)	48	(24.0%)
S. S. rejects (133).	83	(63.0%)	92	(37.0%)
S. S. accepted (613)	147	(24.0%)	466	(76.0%)

BIBLIOGRAPHY

1. A study of specific data in the lives of one hundred and eighty-three veterans admitted to St. Elizabeths Hospital. Alexander Simon, M. D., Margaret Hagan, and Roscoe W. Hall, M. D. War Med., 1: 387-391, May 1941.

2. Dementia præcox in military life as compared with dementia præcox in civil life. Addison M. Duval, M. D., and Jay L. Hoffman, M. D. War Med., 1: 854-862, Nov. 1941.

3. War Neurosis, J. A. Hadfield, Major R.A.M.C., Brit. M. J., 1: 281-285, Feb. 28, 1942; 320-323, Mar. 7, 1942.

AIRCREW SELECTION[1]

WING COMMANDER H. D. MITCHELL

President Medical Reselection Board, R. C. A. F. Station, Trenton, Ontario

The problem of aircrew selection has not as yet been entirely solved although vast improvements have been made since the last World War. In 1914 aviation was still in its infancy and it was not until 1916 that the use of the aeroplane as a war weapon was fully appreciated. During the early years of the war proper selection of aircrew was not given due consideration. It was only after it was ascertained that 50 per cent of the trainees suffered from a neurosis and 90 per cent of the accidents of the graduate pilots were not due to enemy action but to defects in the pilots themselves that steps were taken to remedy the situation. It became obvious that not all applicants were suitable for aircrew duties and efforts were made to raise the physical standards and determine the attributes necessary for flying training.

Interest in aviation has continually increased since the last war and the medical profession, in dealing with the stresses and strains of flying associated with anoxia, cold, fatigue, etc., has contributed greatly in determining the physical standards necessary and how these stresses and strains might be lessened in order to promote efficiency of flying personnel. Since it is now known that all applicants are not suitable for aircrew, the economic factor alone in such a training scheme as is being conducted in Canada and the United States is an important one. Proper selection would save thousands of dollars in training alone if the potential ceased training case could be recognized at the time of his enlistment, as well as eliminating serious accidents and the possibility of losing valuable aircraft. The lowering of morale of those trainees who have had to find out the hard way by hours of flying time that they are not suitable as members of aircrew is also an important factor.

Apart from the age limit there are two important standards in selection of aircrew, namely physical and educational. It is appreciated that flying duties are carried out in an abnormal environment yet it is not sufficient to consider the environment factors alone. It is equally important to understand the special duties of the various members of the aircrew, namely, the pilot, the observer, the wireless air gunner, and the air gunner, for each has his own particular rôle to play. For example, the pilot does not require the same standard of visual acuity, but there must be no eye muscle imbalance nor any manifest hypermetropia, whereas the other members of the crew are required to have almost perfect vision but the occular muscle balance is not so important. Similarly, standards of height, weight and leg length are based on aircraft design and again differ for each member of aircrew.

The educational standards also vary. As it is necessary for the pilot and observer to know and understand the principles of navigation and theory of flying, they must have had some training in higher mathematics. The wireless air gunner and air gunner require more of a mechanical ability and so it is not necessary for them to have reached so high an academic standard.

The selection of aircrew commences at the Recruiting Centre but does not entirely end there. Each applicant is interviewed and examined by three different officers. The medical officer determines his physical fitness for flying and carefully watches for any emotional instability or other temperamental factors. The manning personnel officer determines his academic standard and gives an "ability to learn" test. This is an intelligence test and if the applicant passes in every respect but has not reached the educational requirements he may be sent to a War Emergency Training School for pre-enlistment training and brought up to the required standard. The test, rather than decreasing the number for aircrew training, tends to select those individuals of required intelli-

[1] Read at the ninety-eighth annual meeting of The American Psychiatric Association, Boston, Massachusetts, May 18-21, 1942.

gence who can be taught the subjects applicable to Air Force requirements in a period of eighteen weeks. The prospective trainee is also interviewed by the interviewing officer who inquires into his motives and general suitability for enlistment. An applicant for the position of wireless air gunner is given the code adaptation test to determine whether or not he has the ability to learn Morse. This board of three officers at the Recruiting Centre determines whether or not the applicant is suitable material for aircrew training, and if he is, then in due time, if selected as either pilot or observer, he arrives at an Initial Training School, or, if selected as a wireless air gunner, he proceeds to a Wireless School.

If the trainee is posted to an Initial Training School he again has a careful check. From a physical point of view the latest scientific methods of special selection are carried out. Electrocardiographs are taken in conjunction with the clinical examination of the heart; electroencephalographic recordings are made and each trainee is subjected to effects of decreased atmospheric pressure in the low pressure chamber; besides having special eye, ear, nose and throat examinations, and pulse and blood pressure recordings as to changes in horizontal-vertical positions. This examination is carried out by the Medical Selection Board composed of specialists in internal medicine, otolaryngology, ophthalmology and physiology. It is interesting to note that only 1.9 per cent of the trainees at this stage are rejected from aircrew for physical reasons.

During the eight weeks the prospective pilot or observer remains at the Initial Training School he receives tuition and is examined on such subjects as mathematics, theory of flying, theory of gunnery, theory of navigation and aircraft design. The trainee might not reach the required standard in some of these subjects, or he might not give a satisfactory performance in the visual link trainer, or he might exhibit certain neurotic tendencies, or be a cause of trouble from a disciplinary angle. All of these points are carefully considered and, basing their judgment on these facts as well as the physical condition, the Selection Board determines whether or not the trainee should proceed with his training and if so, is he best suited as pilot or observer. For example, an airman who makes a low visual link mark and has shown evidence of poor coordination but has attained a high standing in mathematics and navigation will undoubtedly be more suitable as an observer than as a pilot.

From this stage of training the prospective pilot, if successful at the Initial Training School, is sent to an Elementary Flying Training School to learn the practical part of flying, and the potential observer to an Air Observer School. As the ceased training observer usually fails for academic reasons or from airsickness, we are mainly concerned with the causes of failure of the pilot trainee. For the past year all ceased training cases from Initial Training Schools, Elementary Flying Training and Service Flying Training Schools, Air Observer and Air Navigation Schools, Wireless Schools and Bombing and Gunnery Schools have been sent to the Composite Training School, Trenton, Ontario, for remustering purposes. Several thousand such cases have been examined and studied from all angles and the temperamentally unfit for further flying training have received special consideration.

An honor university graduate or the best athlete or a combination of the two would not necessarily become an efficient service pilot; in other words, strict physical and educational standards alone are not sufficient for proper selection. It is also necessary to consider the personality makeup of the individual and assess him accordingly. In order to do this one must know what traits of character the applicant should possess in order to fly an aircraft, or conversely what traits make him unsuitable as aircrew material. Here again certain traits may be contraindicated for the pilot but acceptable in the observer. One also must have a knowledge and understanding not only of the stresses and strains encountered during the course of instruction but also those that have to be met in operational work. Then the quickest way to discover the nature of the predisposition to breakdown is to examine those who have developed the symptoms under stress and find out what sort of people they are. In order to do this the best

test is probably still the historical one contained in the airman's experiences of life, and to use this as the basis for judgment is the classical psychiatric method. What sort of reactions has the individual exhibited in the past? How has he met the ordinary trials of everyday life or even the ordinary situations which may be pathogenic in his case and therefore indicative of faults? A difficulty of this method is that it depends to some extent on the reliability of the subject as a witness and this is a great handicap when, as is usual under war conditions, no relatives are available to corroborate or deny.

The personality study on the prospective aircrew member should determine if maturity and discipline are present. An immature, irresponsible youth is not a good subject for further training until such time as he reaches maturity and his actions become disciplined. Under service conditions many of these lads mature very quickly and a fair number lose their irresponsible reactions and do accept responsibilities. It is readily understood why these two traits are essential. When considering the aircrew as a whole, every member of which forms part of a team and each and every member depends on each other one in order to carry out any successful action, an immature, irresponsible lad might, like the weakest link in a chain, be the cause of the loss of a valuable aircraft and the death not only of himself but also the other members in his crew.

The traits or characteristics investigated apart from maturity and discipline in order to select the ideal aircrew trainee might be listed under the following headings:

(a) Morbid fears.

(b) Physiological instability.

(c) Traits of timidity and unaggressiveness.

(d) Other kinds of "nervousness."

(e) Volitional disorders.

The morbid fears would be evidenced by a history of fear of the dark (if pronounced), fear of seeing accidents, fear of being alone, fear of water or of closed spaces, or of illnesses, etc. The physiological instability would portray itself in a history of restless sleep, sleep-walking, stammering, bed-wetting, nail-biting, tics, fainting at the sight of blood, excessive visceral discomfort on emotion or being much disturbed by waiting.

The traits of timidity and unaggressiveness show up in a history of positive avoidance of fights or positive avoidance of dangerous sports, or a distaste for shooting or fishing, or a general lack of aggressiveness. Under other kinds of nervousness, periods of depression are looked for in the life history, as well as anxiety, inferiority feelings, obsessional traits, solitariness or other schizoid characteristics. Obstinancy and lack of persistence are samples of volitional disorders.

In order to illustrate the value of a personality study let us consider the case of a young airman 23 years of age who had successfully completed his course at an Air Observer School and was in the final stages of his training at an Air Navigation School when he developed a persistent headache. Physical investigation revealed nothing of a pathological nature; x-rays; ear, eye, nose and throat examinations and neurological examinations were all negative, but the headaches persisted and his training was interrupted. Upon taking his history at Trenton it was ascertained that from early childhood he had fainted at the sight of blood and, more than that, even when he saw someone ill. Further he had a distinct aversion toward shooting birds or animals and could not bear to hear anyone or anything cry out in fear or pain. This lad was voluntarily being trained as an observer whose duties in operational work consist of aiming and dropping bombs. When asked how he could accomplish this he replied that he would endeavor to hit nothing but his target and if he did hit anything else he hoped he would be so high that he could not see it nor hear any sounds of anyone who might be hurt. The mere suggestion of dive bombing a troopship or train nearly caused a collapse. Needless to say when this airman was informed that he would not have to continue in aircrew the headache entirely disappeared.

Another youth of the same age had walked past the R.C.A.F. Recruiting Centre for months but never had enough courage to enter. He was a timid, unaggressive type who had led a very sheltered life, avoiding dangerous games, had definite morbid fears

and was quite seclusive. However he was called up for compulsory military training and, the first step having been taken for him, he transferred to the Air Force, but soon realized he could not go through with it and went A.W.L. for a considerable period. Then he realized he would be caught and treated as a deserter; so, torn between two evils, he returned to his unit. It was at this time that his life story was unfolded and another lad was greatly relieved when he found he could remuster to some ground trade where he would be of greater service; and he was quite ready to forego any ideas he had previously entertained regarding being a hero in the air.

It is not correct to say that anyone exhibiting one or more personality traits as mentioned previously is unfitted for aircrew. The degree of the defect must be considered and the historical data carefully weighed in order to determine the probability of a future breakdown. The weight to be given to positive findings in all instances is admittedly a matter for the judgment of the examiner and his general experience. It has to be emphasized that this list of enquiries is only useful if given as part of a psychiatric interview and in the hands of an experienced psychiatrist. It is also advisable that a numerical assessment be given in order to facilitate comparison, not only with other airmen but with any kind of formal test of temperament which may be devised and applied to the same subjects. If points are allowed for each trait or characteristic which seems definitely positive, it depends a great deal on the judgment of the interviewer. Thus "fear of the dark"—if the evidence is that it is in a mild degree common in children and not pronounced—is not given a point; whereas "fainting at the sight of blood" could nearly always score a point. Visceral upsets before an important undertaking would have to be either excessive or peculiar before being regarded as significant.

The personality of the individual, provided it is determined he is not prone to psychoneurotic or similar breakdown, often determines the position in aircrew for which he is best suited. This of course has to be considered together with physical and educational standards. For example, if the applicant is physically fit and has the educational qualifications but is the quiet, reserved, deliberate but unaggressive type, he would be better suited as an observer rather than a fighter pilot.

In conclusion then the selection of aircrew depends on a battery of tests, the three most important being physical, educational and psychological. It is equally as important to know the requirements of the various members of an aircrew to be able to select wisely and carefully rather than the old trial and error method.

WARTIME TASKS OF PSYCHIATRIC SOCIAL WORKERS IN GREAT BRITAIN[1]

MILDRED C. SCOVILLE,[2] New York, N. Y.

The story of psychiatric social work in Great Britain during the war is still in the making. Only brief sketches of activities are available and this report, drawn chiefly from letters and informal accounts, must necessarily be episodic and inconclusive. It makes no pretense to anything original; practically everything should be in quotations, but it may have value for that very reason. Thanks and credit are gratefully given to many friends in Britain, who have taken time away from those hours of possible rest to send notes regarding an amazing social experience.

How wartime demands for service with children and others were met by psychiatric social workers can be viewed in proper perspective only against a background of the development and distribution of mental health services before the war and also of the official plans made for the care and protection of children under war conditions. Less than fifteen years ago the trained psychiatric social worker was unknown in Britain; and work along child guidance lines was limited to two or three pioneer efforts. In 1927 a child guidance program was begun, including the establishment of a clinic for service and training purposes; the inauguration of a graduate course of training for psychiatric social work; and the loan placement of such workers for demonstration purposes. By 1939, just before the war, there were around 200 psychiatric social workers in Great Britain, employed chiefly in mental hospitals, observation wards, psychiatric clinics of general hospitals and in child guidance clinics; and the number of child guidance clinics had increased to around 60. In spite of this great expansion in the provision of clinic facilities for children and in trained personnel, the numbers were insufficient to serve the population adequately and the distribution of such services was rather definitely restricted to the large centers.

Governmental planning for the war eventuality directly contributed to the course of development in the mental health field, due to two major provisions for the protection of the civilian population, both based on the belief that large cities would be immediately bombed. These provisions were: the immediate and wholesale evacuation of school children, infants with their mothers, pregnant women, and various types of the chronically ill and the handicapped from the "target areas"; and the reshuffling of medical personnel and hospital facilities, including the evacuation of many hospitals and the assignment of medical personnel from the established to the emergency medical services. When war came, widespread redistribution of the population from the large cities to outlying country districts resulted. The "target areas" evacuated hundreds of thousands of people. As these inhabitants moved away many schools were closed, some of the health services were suspended, certain mental hospitals were taken over for the emergency medical services, and many child guidance clinics were closed. The reception areas received these hundreds of thousands, never quite knowing how many were coming or when and, more important still, what problems they were bringing with them. This redistribution of the population, unfortunately, was not accompanied by an adequate redistribution of many of the special services, particularly of professional personnel in the psychiatric field. Psychiatric planning had been done, but primarily on the basis of a presumed great increase in psychiatric casualties in the "target areas" following the expected bombings. This eventuality did not occur, but others, unthought of and unplanned for, did, and psychiatric services were not available where the needs for such service developed with great and overwhelming rapidity.

Early September 1939, when war came, was a period of chaos and uncertainty for

[1] Read at the ninety-eighth annual meeting of The American Psychiatric Association, Boston, Massachusetts, May 18-21, 1942.

[2] Executive Assistant, The Commonwealth Fund.

psychiatric social workers. Many jobs had ended abruptly; the familiar landmarks of organizational functioning—hospitals, clinics, psychiatrists, even clientele—had been swept away almost overnight. The routine functioning of psychiatric social workers, in London at least, came almost to a standstill. But individual psychiatric social workers were more than active, usually on a voluntary basis, helping in one way or another with the great migration of the population. These workers found themselves and occasionally met one another acting as messengers to station masters while trains were being loaded with children, checking through the gas masks and "iron rations" of school children, carrying wailing infants and newspaper parcels beside mothers into underground stations, posting notices outside schools telling mothers that their children had safely arrived in such and such a place, and even being cleaned up in a delousing center! This was not psychiatric social work according to the book but a big job had to be done and one by one they had drifted into helping with it.

In the tremendous upheaval which resulted from evacuation many difficulties immediately arose, both in the cities (the evacuating areas) and in the country districts (the receiving areas). The population of the cities, faced with all kinds of possible dangers and with the disruption of ordinary life, had been deprived of many services to which it was accustomed. The country districts to which so many thousands had been sent were generally ill-prepared to handle the vast array of health, social and emotional problems which seemed to be multiplying with the rapidity of white mice. Official and voluntary groups soon recognized the urgency of the situation and quickly undertook the necessary planning to redistribute professional staffs and services from the somewhat depopulated large centers to the crowded reception areas. And the course of wartime psychiatric social work was gradually charted.

A register of psychiatric social workers had been compiled and psychiatric social work had been officially listed as a "reserved occupation" by the Ministry of Labour, *i.e.*, not subject to conscription for national service. It was essential that services be placed to the best advantage, but this was difficult to judge, owing to the shifting population. Attempt was made, however, to continue in so far as possible psychiatric social work within the established clinics and hospitals and to place workers in the reception areas for assistance with evacuation problems. Local authorities were offered, and several accepted, the loan of experienced psychiatric social workers.[3] Their services were so successful that the Ministry of Health agreed to pay for such appointments upon application from the local billeting authority. This work progressed steadily and spread from reception area to reception area. The number of psychiatric social workers in the evacuation services soon increased from 7 to 30. The distribution of such workers over the country changed markedly, 65 per cent working outside of London, as compared with 46 per cent just before the war.

Many of these psychiatric social workers went into parts of the country where child guidance was unknown and anything "psychological" was suspect. They were faced with the necessity of functioning without the facilities that had previously surrounded their professional efforts. Clinics, clubs and recreational centers were frequently nonexistent. Foster homes were filled to overflowing. Often the worker's own car was the only place in which to talk with a child. Parents were elusive but could occasionally be seen on fleeting visits in station waiting rooms. "This was a period of critical test for the social services. Speed was essential. Efficiency, wisdom and quiet confidence had never been more necessary or more valued, or more difficult to sustain. Gone were the regalia of offices and files, typewriters and desks. Only what the social worker had, so to speak, in her bones, was of any use to her, and this had to be used as an accompaniment to the immediate care of urgent physical needs."[4] The adaptability of the psychiatric social worker was being tested

[3] These arrangements were made by the Child Guidance Council and the Joint Mental Health Emergency Committee, composed of five national organizations and professional associations, and established early in 1939 for united planning and functioning during the war emergency.

[4] Crosthwaite, A., and Brown, S. C.: Our Hopes for Victory. Social Work Today, 9:7-10 (Feb.) 1942.

almost as much as her professional skill and knowledge.

The functions of workers in the reception areas were many and varied. Evacuation difficulties are of concern, first, to the children themselves, their hosts, their teachers and their distant parents; secondly, to the many professional and lay individuals working on behalf of the evacuees. The psychiatric social worker tried to meet the requests for service coming from those surrounding the child and also to appraise and assist with the problems, frequently unexpressed, of children and their parents. While doing this, she attempted to find her proper niche in the complex and usually uncoordinated administrative set-up, involving medical officers, billeting officers, education officers, public health nurses, welfare workers, school teachers, members of the women's voluntary services, etc.

Billeting problems made up the core around which all other functions were grouped. Assistance was given to billeting officers in selecting homes most suitable for difficult children. Surveys of hostels were made at the request of medical officers, with recommendations for reorganization, for staffing, and for the proper classification and selection of children. In a number of regions special hostels were established for children manifesting emotional and behavior difficulties, with psychiatric and psychological service on a sessional basis, and admissions and discharges cleared through the psychiatrist or the psychiatric social worker.

Children needing individual attention were referred by medical and billeting officers, teachers, foster parents and other social workers. The problems covered the long list familiar to child guidance clinics, such as enuresis, temper tantrums, night terrors, refusing food, pilfering, general unruliness, etc. In some districts a child guidance clinic or psychiatrist was within reach and the psychiatric social worker had this support in her case work. In other districts she had to depend on herself. In such situations usually the most that could be done was the alleviation of difficulties through understanding, through some modification of the environment, and through the release of some of the emotional tension. It was sometimes possible, however, to establish centers where children could attend regularly for play, observation and discussion. The social workers were continuously aware of the limitations of their professional competence and constantly stressed the need for psychiatric service, with the result that since the war fourteen new child guidance clinics have been established, chiefly in these areas.

Early in this experience psychiatric social workers recognized as vital the establishment of closer working association between the evacuating and receiving areas. Arrangements were made in some areas with child guidance clinics for information to be sent in advance of evacuation regarding those children in need of special attention. Parents' advice bureaus and special liaison schemes were established in some regions for maintaining contact both with parents and with their children, so that satisfactory assistance could be given to anxious parents and disturbed children on the basis of first-hand knowledge of conditions in their own homes and in the foster homes.

Meanwhile, London and other cities were heavily bombed and psychiatric social workers took their places alongside other workers in shelters and rest centers to help with problems as they arose. Into these centers during intensive bombing came hundreds of people who had lost their homes, possessions, relatives and friends. Their immediate needs were for shelter, food and clothing and much of the work was of an emergency relief, first-aid type. As the organization of the rest centers improved, opportunity became available for limited forms of case work, and some attention to special problems. Although in the main the individuals seeking shelter showed an extraordinary calmness, there were many who needed relief from emotional tensions and who were helped through such simple things as an attentive ear, a little hand holding and suggestion. Apparently one great need of many of the inhabitants was for coherent direction; for some prescribed pattern of orderly living within which they might begin again to pick up the threads of life; for immediate help to preserve the essentials of living—health, some kind of routine in lieu of normality, and self-confidence. The workers needed great understanding and skill to pro-

vide a service promoting security without fostering too much dependence.

In addition to this generalized need for individual help, the rest centers usually had among their changing populations a number of psychiatric cases of long standing—former mental hospital patients, mental defectives, epileptics and senile individuals who had managed to get along in normal times but required skilled help when relatives and home were gone. An important part of the service was the detection of probable psychiatric problems and their referral for proper care. More attention to emotional problems was possible in the "second line" rest centers, to which the homeless were sent as rapidly as possible from the centers in the bombed areas. Clinic treatment was arranged when necessary; individuals were noted who might require an occasional visit after they had been billeted; special billets were located for those obviously unsuitable for ordinary billeting. A great amount of work was involved in such special billeting, but the successes outnumbered the failures. Such work has shown that many individuals and families, homeless and discouraged, can settle down to new ways of life if there is understanding assistance available for the many difficulties at the start.

More recent developments in the field of psychiatric social work are the appointment of three workers by the Admiralty to advise in collecting and assessing material obtained by tests and interviews regarding candidates for the Navy; and in the follow-up of psychiatric cases discharged from the services.

In following the development of psychiatric social work during the war, a known fact again becomes clear—that people are not effectively served through mass plans and categorical provisions alone. In the many provisions for mass care through evacuation, air raid shelters, rest centers, etc., we see the increased demand for service related to emotional and adjustment problems. People were unable to restrict their needs entirely to the proper categorical provisions—to such essentials as food, shelter, clothing and, if possible, safety. They responded as individuals, with very personal needs and anxieties and demands, to the actuality of widespread insecurity. The bombed out were not served just with shelters; nor the evacuated just with safe places of residence. The categories had broken down into individuals. Through the story of widespread dislocation and disaster we see the personal reactions of an individual to his situation, however much tempered by the similar fate of others, still determining his adaptation and indicating his need for help—more rather than less insistent due to the widespread disturbance to ordinary living. This need, anticipated by few before the war, is widely recognized at this time in both professional and official quarters.

Any discussion of psychiatric social work necessarily tends to emphasize maladjustment and this may give a false impression regarding the general incidence and severity of mental ill health. It is still too early to know exactly what is happening to the emotional development and mental health of the children in Great Britain. The opinion generally held by child psychiatrists and psychiatric social workers is that the disruption of family life, caused by evacuation and other factors, has had a more obvious and probably a more real and serious effect on the mental health of children than has the subjection, however severe and continued, to the horrors and dangers of air raids and bombings. Reports of studies are available which support these opinions and indicate the amazing resiliency of children to situations dangerous to life and their marked susceptibility to the uprooting of family life and emotional ties. The studies also indicate that the age group from two to five years is particularly vulnerable, not only to separation from their mothers but also to the emotional reactions of their mothers in times of general stress.

Regarding the maladjustments in evacuation, a study of 656 school chidlren in Cambridge reports 8.2 per cent of these children unsatisfactorily adjusted in foster homes and 4 per cent evidencing problems of considerable severity requiring skilled treatment.[5] Regarding the effects on children of severe and continued air raids, a study of 8,000 school children in Bristol shows that only 4 per cent manifested signs of strain,

[5] The Cambridge Evacuation Survey: Edited by Susan Isaacs with the cooperation of Sibyl Clement Brown and Robert H. Thouless: London, Methuen and Co., 1941.

either psychological or psychosomatic, with one-half of those affected falling in the 5 to 7 age group. Out of a group of 54 children evacuated under particularly terrifying and hazardous conditions from a bombed hospital in Bristol, 61 per cent showed signs of strain for three weeks to two months and 11 per cent showed persistent symptoms after seven months, all the latter being between one and 5½ years of age.[6] Professor Cyril Burt reports that, both in evacuation and in air raids, the older pre-school children (aged 2 to 5) rather than those under 2, suffer most severely. Regarding the effect of air raids, he reports "a close relation between disturbances in the child and the alarm felt by the mother during the raid while with the child."[7] Anna Freud and Dorothy Burlingham, in a recent report regarding 138 children (aged 10 days to 6 years), state that there were no observable "signs of traumatic shock" among the children, many of whom had experienced repeated and highly destructive bombings; and, further, that "London children . . . . were on the whole much less upset by bombing than by evacuation to the country as a protection against it."[8] The authors indicate, however, that the methods of evacuation and separation from parents may be more of a determining factor than the actual separation. Most of the authors report few hysterical reactions, the disturbed children being chiefly excessively anxious or depressed, or unusually aggressive and quarrelsome.

In considering the evidence regarding emotional problems among children who have been evacuated, it seems important to remember that the methods followed in the official scheme were not particularly conducive to satisfactory adjustments. Dr. Susan Isaacs, in reporting a study of evacuation, states that its successes "might have been greater and more enduring . . . . its failure might have been much less . . . . if the Government and the authorities co-operating with the Government, as well as the general public, had seen that evacuation, from its very nature, was necessarily far more than an emergency military measure. It was a process which could not occur without creating far-reaching social and educational problems. If we had planned for these problems with a tithe of the labour and intelligence which we put into questions of transport, if human nature had been taken into equal account with geography and railway time tables, there would in all likelihood not have been so serious a drift back to the danger areas . . . . In especial, the strength of the family tie, on the one hand, and the need for skilled understanding of the individual child, on the other, seem to have lain too far outside the ken of those responsible for the scheme."

Psychiatric social workers, through their knowledge and skill, have done much along with others to counteract some of the weaknesses of the evacuation scheme but they were not called upon for advice and service early enough, and there were not enough of them. The shortage of psychiatrists greatly complicated the whole picture of providing adequate service. In clinical work the responsibilities of the psychiatric social worker are defined and her work is constantly subjected to the discipline of professional discussion and practice. In these new pioneering jobs, difficult for any but the most experienced, the psychiatric social worker had to be prepared to interpret her own function and to determine for herself the limits of her responsibilities. The dangers are recognized and the quality of work is being closely watched. For this reason, in spite of great shortage of personnel, the psychiatric social workers in Great Britain are strongly opposed to any short wartime course of training, believing that such work cannot be learned in a few months and that brief training courses would inevitably lower standards.

In this third year of the war, it is clear that psychiatric social workers in Great Britain have swung into their wartime stride. They have been called upon to undertake

[6] Bodman, F.: War Conditions and the Mental Health of the Child. British Medical Journal, 2: 486-488 (Oct. 4) 1941.

[7] Burt, Cyril: The Evacuation of Children under the Age of Five: Abstract of a paper read at a meeting of the British Psychological Society, December 20, 1941.

[8] Burlingham, D., and Freud, A.: The Young Child in War Time. New Era in Home and School, 23: 57-61 (April-May) 1942.

highly responsible work; they have found the continued stress of war a challenge, invigorating in its effects thus far at least. In the words of an English friend, "I think they have responded magnificently to all the calls; they have not stood upon the order of their going but have risen to every emergency, whether bombs or bugs; and have proved their value over and over again. They have had to be elastic in their techniques; they have had always to be social workers."

NON-CONVULSIVE ELECTRIC (FARADIC) SHOCK THERAPY OF PSYCHOSES ASSOCIATED WITH ALCOHOLISM, DRUG INTOXICATION AND SYPHILIS

A Psychosomatic Approach in the Treatment of "Reaction of Delirium" [1]

NATHANIEL J. BERKWITZ, M.D., Ph.D., Minneapolis, Minn.

Except for differences in the underlying causes, the psychogenesis of toxic-organic and psychogenic reaction types of psychoses is quite comparable. In either case the pre-existing personality and the mental and physical state of the individual just prior to the onset of his psychosis are significant contributory factors. Emotional shock, injury or infection often precipitates or aggravates the psychosis.

Emotional excitement, fear and other symptoms of delirium which frequently appear in the psychogenic or toxic-organic psychoses increase suggestibility. Customary psychotherapy alone all too frequently fails to help the patient. In the past few years, however, various forms of shock therapy, which produce psychologic as well as physiologic effects, have proved to be of great value in the treatment of psychogenic psychoses when used in conjunction with psychotherapy(1). Experience has shown that the patients who respond best to shock therapy are those in whom the onset of psychoses is rather sudden, the symptoms unpleasant and the insight incomplete. Since these features are characteristic of the toxic-organic as well as the psychogenic reaction types, a study was undertaken to determine whether the toxic-organic psychoses would likewise respond favorably to shock therapy.

Experience having proved that non-convulsive electric shock therapy is a safe procedure(2), it was administered in conjunction with the generally accepted routine medical procedures in 67 cases of psychoses associated with alcohol, morphine, barbiturate, bromide, paraldehyde and chloral hydrate intoxication and five cases of psychoses associated with syphilitic infection of the central nervous system (general paresis). Treatment was given at the Minneapolis General Hospital and at the Glenwood Hills Hospitals (Minneapolis).

Method of Treatment

Each patient is given the usual routine treatment for toxic-organic psychoses; namely, (1) elimination of the toxic processes, (2) support of the vital functions and (3) control of the delirium. All these procedures are indispensable, but in this paper particular emphasis is given to the control of delirium. Since improper use of physical or chemical restraints aggravates and prolongs the delirium, physical restraints are avoided as much as possible. Only in an occasional case are hypnotics administered during the day. At night, when the patient is apt to be more disturbed, intravenous barbiturates (pentothal sodium or sodium amytal) are most desirable; their action is quick and certain and their elimination so rapid that accumulation is unlikely. The nurse is instructed to administer 3 drams of paraldehyde if the patient again becomes disturbed; smaller doses often increase excitement.

A non-convulsive electric shock treatment is given each morning until all symptoms of delirium have disappeared and the patient has regained insight.

The following is a brief description of our technique with modifications made since the publication of our previous report(2). A high frequency (faradic) current averaging from 10 to 20 milliamperes is passed through Cambridge E.K.G. electrodes placed over each temple. The current is produced by an induction coil (Model T Ford), energized by a six volt dry cell battery of the

[1] Read at the ninety-eighth annual meeting of The American Psychiatric Association, Boston, Mass., May 18-21, 1942.

From the Division of Nervous and Mental Diseases, University of Minnesota Medical School and the Neuropsychiatric Division of the Minneapolis General Hospital. Dr. Berkwitz is now serving as Major in the United States Army Medical Corps, Station Hospital, Camp Crowder, Missouri.

"A" type. Fifteen brief shocks of one-half second's duration are given at half-second intervals. A 5 per cent solution of pentothal sodium is slowly injected intravenously while the series of shocks are given. A foot switch added to the electrical apparatus facilitates this procedure. In the more disturbed patients 6 to 10 cc. of pentothal sodium are usually required to produce sleep. As improvement occurs, smaller amounts are needed. A 10 per cent solution of sodium amytal (4 to 6 cc.) is used in place of pentothal sodium when a more prolonged sleep is desired. Stuporous or uncommunicative patients are given sub-narcotic doses of only 3 to 4 cc. of sodium amytal, which generally makes them more responsive.

It has been our experience that most patients show improvement after one to four shock treatments. Only in rare instances have we felt it worth while to give more than ten shock treatments.

Since anorexia is a common symptom of delirium, undernourishment and loss of weight are often seen in subacute or chronic delirious states such as Korsakow's psychosis and general paresis. To stimulate the appetite these patients are usually given 25 to 50 units of insulin two hours before each shock treatment. The mild hypoglycemic reactions resulting from this procedure also produce more or less psychophysiologic stimulation in addition to that of the electric shock.

Clinical Results

Encouraging results were obtained in practically every one of 72 cases of toxic-organic psychoses treated with non-convulsive electric shock therapy in conjunction with the accepted specific and general routine medical procedures. These cases are presented in three groups: (1) fifty-four cases of psychoses associated with alcoholism; (2) thirteen cases of psychoses associated with other drug intoxications; (3) five cases of psychoses associated with syphilis of the central nervous system (general paresis).

Group I—Psychoses Associated With Alcoholic Intoxication

Alcoholism is more often a symptom than a cause of mental instability. The occurrence of alcoholic psychosis is the exception rather than the rule, for among chronic drinkers common drunkenness without a true psychosis is the usual result of excessive drinking. Pathologic intoxication, delirium tremens, and Korsakow's psychosis are the most common alcoholic reaction-types.

(a) *Pathologic Intoxication,* an acute mental disturbance, is often initiated by a few drinks or a short spree, lasting from a few hours to a few days. The profound mood disturbances, such as rage, depression or severe anxiety which are set free by a small amount of alcohol, illustrate how important a rôle the psychogenic factors play in this condition. The reactions are similar to those in acute hysterical outbursts, and most patients recover without medical attention. Depression is the most common form of pathologic intoxication admitted to hospitals because individuals in this condition frequently attempt suicide. Although many patients recover spontaneously after a protracted sleep, some become so disturbed and excited that they cannot sleep. The action of oral hypnotics in these cases is uncertain and many patients are made even more disturbed by their use. Rational appeal is of no avail in treating pathologic intoxication.

Case 1.—I. K., female, aged 34, high school graduate, was brought to the hospital at 4.30 a. m. because she had attempted suicide by drinking iodine. When admitted, she had a strong odor of alcohol on her breath. After gastric lavage she was placed in the psychiatric ward. She cried hysterically, tossed about in bed and was unable to sleep. Failing to recover by noon, she was given a non-convulsive electric shock treatment with 5 cc. of a 5 per cent solution of pentothal sodium. Ten minutes later, when she awakened, she talked freely and was able to relate her history. She had been divorced for two years, but still loved her husband and blamed his mother for their separation. They continued to see each other often, the last time being two days prior to her admission to the hospital. Since her divorce she drank frequently to drown her sorrow, but it only made her more depressed at times. On the night before her admission, she went out with another man and drank "several Scotch and sodas." When she returned home after midnight, her parents reprimanded her severely for drinking. This made her more depressed and provoked her to attempt suicide. Shortly after the shock treatment she became composed and cooperative. Since the acute episode subsided promptly after the shock treatment, she was permitted to return home that same evening.

Non-convulsive electric shock therapy was administered to eight victims of pathologic intoxication (including case 1) who were admitted to the hospital during the night and had failed to recover by morning. The immediate recovery of all eight patients following a single shock treatment indicated beyond question that the duration of this reaction type is definitely shortened with this method.

(b) *Delirium Tremens* occurs either as an episode in the course of chronic alcoholism or after one or two weeks of heavy drinking. Many of these patients have suffered earlier attacks of pathologic intoxication. Long habituation to alcohol often causes a change in their personalities and an increase in their tolerance to the drug. Consequently the symptom-complex of delirium tremens differs from that which occurs in acute alcoholic conditions (pathologic intoxication). The condition usually lasts from three to six days when treated by routine measures without shock therapy.

CASE 2.—S. E., male, aged 34, single, a meat cutter by trade, had been a heavy drinker for fifteen years. During his latest drinking bout, which started four months prior to admission to hospital, he drank from one to two pints of liquor every day. One week before admission he was discharged from work because of intoxication. This depressed him greatly and he drank more than ever. Two days before admission he suddenly stopped drinking after having an epileptiform convulsion. The following day he became excited and hallucinated. He believed that he was covered with insects and that his mouth was full of hair. He was taken to the hospital late at night in an extremely excited condition, trembling and perspiring profusely. He was given 3 drams of paraldehyde and placed in restraints for protection. He slept only a couple of hours and begged frequently for paraldehyde. The following morning he was given a non-convulsive electric shock treatment with 4 cc. of a 5 per cent solution of sodium amytal. Instead of producing sleep, this large amount of the drug only made him more excited. His behavior approached that which often occurs when an insufficient amount of metrazol is given to produce convulsions. A few minutes later, he was given another electric shock treatment with 8 cc. of a 5 per cent solution of pentothal sodium. This produced a deep sleep for one hour. When he awakened his behavior was greatly improved. He was quiet and cooperative, and his terrifying hallucinations vanished completely. His appetite returned and he no longer asked for sedatives. Since he slept soundly that night without sedation, he was not given further shock treatments. He was kept in the hospital four days for further observation, then released.

The results obtained in 43 cases of delirium tremens receiving non-convulsive electric shock therapy coupled with the usual medical treatment have been previously reported(3), but will be summarized here. Since recovery invariably occurs when the patient can sleep without strong sedation, the number of days that strong sedation is required may be used as an index for comparing results of treatment, provided, of course, that all other symptoms of delirium have disappeared.

In one series it was reported that 33 patients treated with non-convulsive electric shock in addition to routine medical treatment became symptom-free in an average of 2.2 days, whereas in a control series of 43 patients who received the same routine medical treatment (without shock treatment) recovery required on an average, 5.0 days. The latter time for recovery corresponds to that reported by other workers(4).

In another series a study was made to determine the relative effectiveness of (1) paraldehyde, (2) intravenous barbiturates and (3) non-convulsive electric shock treatment. Thirty cases of delirium tremens admitted to the hospital were assigned in rotation to one of the three groups. Since previous experience had convinced us that paraldehyde often aggravates and prolongs the delirious condition, it was used less frequently than in the first series. The 10 patients who received paraldehyde alone (using the same index of comparison of recovery as above) recovered in an average of 3.7 days; the 10 patients who received two daily injections (morning and evening) of intravenous barbiturates (pentothal sodium or sodium amytal) without shock treatment, recovered in 2.7 days; and the 10 who received daily non-convulsive electric shock treatments with pentothal sodium recovered on the average, in only 1.9 days. These results indicate that the duration of delirium tremens (1) is shortened when paraldehyde is administered more judiciously; (2) is further shortened when intravenous barbiturates are used, and (3) is briefest of all when non-convulsive electric shock and intravenous barbiturates are administered simultaneously.

(c) *Korsakow's Psychosis.*—This reaction type is not specific for alcoholism; it also

occurs as a complication in a host of other toxic conditions. In its early stages it is not easily differentiated from delirium tremens. It differs from the latter in that it usually appears after months instead of weeks of continuous heavy drinking. The onset is more insidious, excitability is less marked, confusion and memory defects are more pronounced and the course is more prolonged. Since Korsakow's psychosis generally follows a prolonged drinking spree, malnutrition is commonly associated with it. For this reason several writers believe that vitamin deficiency is the cause of this condition, but the theory has not been proved(5). Korsakow's psychosis occurs with or without polyneuritis, just as alcoholic polyneuritis may occur without a psychosis.

CASE 3.—P. C., male, aged 45, single, started to drink while attending high school. After serving in the army in 1918, he was employed as a mail clerk. Although he drank heavily, he managed to keep his job until 1935 when he lost it on account of intoxication. During his most recent spree he drank from one to two pints of liquor every day for six months and in the last few weeks ate very little. Finally a friend took him to the hospital. Because he was ataxic and only slightly confused, the interne diagnosed his condition as common drunkenness. For four days he was given two brewers yeast tablets t. i. d. and paraldehyde every night. Instead of improving he became more irrational and confused. On the fifth day it was discovered that the muscle and tendon sense was increased, that the superficial sensation was decreased distal to the wrists and mid-tibial regions and that the deep reflexes were absent. Since the patient also exhibited a marked memory defect and a tendency to confabulate a diagnosis of Korsakow's psychosis was made. As his condition continued to deteriorate on the seventh day after admission he was given a non-convulsive electric shock treatment with pentothal sodium in the morning and another in the afternoon. After the second treatment he was less confused, he no longer required sedation for sleep and his appetite returned. He was given the third and last shock treatment the following day. From that time on he showed no further symptoms during the day although for several days he became slightly confused towards evening. Because of his peripheral neuritis he was kept in bed for three months. During this period massive doses of vitamins were administered but did not appear to hasten recovery from neuritis.

Three cases of Korsakow's psychoses associated with alcoholism (including case 3), were given non-convulsive electric shock treatments with pentothal sodium in addition to the same routine medical treatment administered to the patients with delirium tremens. All three showed so little excitement or hyperactivity on admission that they were considered as cases of impending delirium tremens. Not until characteristic symptoms such as recent memory defect and confabulation were elicited, was the diagnosis of Korsakow's psychosis made. Case 3 showed definite evidence of peripheral neuritis in the extremities. In the two other cases hypertrophy of the liver with slight jaundice and mild peripheral neuritis in the lower extremities were present.

All symptoms of delirium disappeared after three shock treatments were given to case 3 and five to the other two patients, but some dulling of their intellectual processes persisted for several days. In other words, the "reaction of delirium" disappeared before complete resolution of the toxic changes of the central nervous system had taken place. Naturally, shock therapy is not expected to correct organic changes caused by toxic factors.

GROUP II—PSYCHOSES ASSOCIATED WITH OTHER DRUG INTOXICATIONS

"Reaction of delirium" also occurs with morphine, paraldehyde, chloral hydrate, barbiturate and other chronic drug intoxications. These different drugs often produce similar clinical pictures, though any one of them may cause very different reactions, depending upon the make-up of the individual. The physiologic processes of the human organism gradually become accustomed to the drug and, in the event of a sudden withdrawal, a dysfunction of the autonomic nervous system results. This dysfunction produces disagreeable symptoms which contribute to delirium, particularly in the poorly integrated personalities who more readily fall victim to drug addiction.

(a) *Psychoses Associated with Morphine Intoxication.*—Before acquiring the morphine habit, many of these individuals have been chronic users of alcohol or other drugs. A large number have been able to abandon the habit without medical assistance, only to return to it later when they again find it too difficult to make satisfactory adjustments in life.

CASE 4.—S. M., male, aged 49, widower, showed neuropathic tendencies since childhood. He frequently changed occupations and in recent years he sold punch-boards for a living. During service in the First World War he contracted pulmonary tuberculosis. While a patient in a Veteran's Hospital he acquired the morphine habit. Later, he took from 4 to 6 grains of morphine daily and also used heroin at times. In 1932 he "took a cure" by the slow withdrawal method over a period of several weeks. He then married and used no morphine for three years. He returned to the morphine habit after the sudden death of his wife. As it became more difficult to obtain morphine, he made several unsuccessful attempts to break the habit.

Prior to the time he entered the hospital he took 6 to 8 grains of morphine daily. On the day of admission he was given a non-convulsive electric shock treatment along with 6 cc. of a 5 per cent solution of pentothal sodium. That night he slept only five hours after receiving 20 grains of chloral hydrate. The following morning he was given 30 units of regular insulin, and two hours later he was given a non-convulsive electric shock treatment along with 8 cc. of a 5 per cent solution of sodium pentothal. While he was still asleep, he was given 50 cc. of a 50 per cent solution of glucose intravenously. That afternoon he became delirious, rolled on the floor and demanded morphine. He was quieted with ½ grain of codeine sulphate and 1/100 grain of hyoscine hydrobromide. During the night he had several large emeses and slept only one hour. Four hours after the third electric shock treatment he again became restless, but was quieted for the rest of the day with ½ grain of morphine sulphate and 1/50 grain of hyoscine. That night, after he was given 3 grains of seconal and 3 grains of sodium amytal by mouth, he slept eight hours. The next two days he was given similar amounts of insulin followed by non-convulsive electric shock treatments and pentothal sodium and he slept through the night without sedation. After the fifth shock treatment he was symptom-free and required no further sedation. The following week he was cheerful and optimistic and had gained ten pounds in weight. On account of the expense he remained at the hospital only two weeks. He failed to return for follow-up treatment as he had promised and several months later it was learned that he was again taking morphine.

Five cases of morphine addiction were treated with non-convulsive electric shock treatment. All these patients had taken morphine over a period of ten to twenty-five years, and all had previously "taken a cure" on one or more occasions. Not one of these patients required strong sedation after the fourth treatment and none showed any withdrawal symptoms after the fifth shock treatment. All were kept in the hospital for approximately two weeks to build up their morale and physical health, but this short period is obviously too brief to attempt rehabilitation in such chronic cases. Shock therapy alone cannot be expected to alter an individual's mental make-up.

(b) *Psychoses Associated with Paraldehyde and Chloral Hydrate Intoxication.*—The effects of these two closely related drugs resemble those of ethyl alcohol. Alcoholics frequently discover this relationship when given these drugs for hypnotic purposes. Some then use them for sleep at night as an accompaniment to alcohol, and some take them exclusively as a substitute for alcohol. Since the effects of these drugs simulate those of alcohol, it is often difficult to differentiate without a history the delirium resulting from their use from alcoholic delirium tremens.

CASE 5.—I. C., male, aged 36, married, a dentist, was always moody, timid and dependent upon his mother. As he was not successful in his practice he became more neurotic and in 1928 he started the habit of taking barbiturates. In 1932 he was married, although still financially dependent. Because of palpitation, precordial pain and fatigue, he frequently visited physicians. As time went on, he took more and more barbiturates which affected his power of concentration and memory. He then feared that the drugs were "destroying" his mind, and in 1937 his parents placed him in the hospital for treatment. Unfortunately, he was given paraldehyde for sleep on a few occasions. Before he could sleep without sedation, he influenced his parents to take him home, and shortly thereafter he began to take paraldehyde on his own initiative. Before long, he required larger amounts for relief of his symptoms, and changes in his intellect and behavior appeared. First, he declined to attend to his practice, then he refused to leave his house and later he refused to leave his bed. He took over 40 cc. of paraldehyde and 6 grains of seconal daily. Not until his wife threatened to leave him did he agree to return to the hospital (September 1940). On sudden withdrawal of paraldehyde, he became confused, voided on the floor, talked to imaginary people, and exhibited eroticism by exposing himself and making sexual advances to others. Not until the fourth hospital day, when his family learned that his condition had grown worse, was permission for shock treatment obtained. With the first non-convulsive electric shock treatment 10 cc. of a 5 per cent solution of pentothal sodium was given. Though it failed to produce sleep, it quieted him for three hours. Later in the day he threw himself on the floor, banged his head against the wall and picked at imaginary objects. Ten cc. of 5 per cent pentothal sodium given with the second and third electric shock treatment again only made him drowsy. After the third treatment he remained more rational. That night he no longer asked for paraldehyde and slept 4½ hours after taking 15

grains of sodium bromide. After the fourth shock treatment his appetite improved, he visited with other patients, and slept seven hours after taking 20 grains of chloral hydrate. The night after the fifth shock treatment, he slept eight hours after receiving 10 grains of chloral. After the sixth and last shock treatment his appearance and behavior improved considerably. From then on he slept well every night without sedation.[1] He remained in the hospital two weeks for further observation and psychotherapy.

Five months later he returned for a follow-up examination. He insisted that he had not taken drugs of any kind since he left the hospital, but he had not returned to work. Although he appeared to have maintained his improvement, his pre-psychotic make-up remained unchanged.

Three cases of paraldehyde and two of chloral hydrate addiction were treated with the non-convulsive electric shock method. The "reaction of delirium" disappeared in all cases after six or fewer daily treatments. Since most of these patients were chronic users of the drug dulling of the intellect persisted for a few days after the delirious behavior disappeared; but it is common experience that without shock therapy, psychoses of this nature often persist for weeks or months or even continue indefinitely.

(c) *Psychoses Associated with Bromide and Barbiturate Intoxication.*—Chronic and excessive use of these drugs also produces confusion, fear reactions, hallucinations and delusions along with such physical symptoms as ataxia, coarse tremors and thick speech. These drugs are eliminated slowly and hence accumulate and remain in the system for a period of weeks.

Case 6.—H. C., female, aged 37, married, housewife, left school in the sixth grade, at the age of thirteen. When fifteen she worked as a waitress in a restaurant. Her sister, a morphine addict, influenced the patient to use morphine at the age of sixteen. When she was twenty-two, with the help of her mother she stopped taking the drug by gradual withdrawal over a period of three months. Nine months later, during an acute illness, she returned to the habit. Soon afterwards she took ½ grain of morphine intravenously four times a day. When 28 years of age she married. As it became more difficult to obtain morphine, she used paregoric. Later, when she moved to Minneapolis (three weeks before she entered the hospital), she was unable to purchase paregoric without a prescription. She then took eight tablets of triple bromides three times a day, or 8 Gm. daily for three weeks "for nervousness." She became so confused that she almost set fire to her apartment and was taken to the hospital. On admission she was ataxic and confused and had terrifying hallucinations. Her urine showed a heavy trace of bromide. She was given 40 grains of sodium chloride, 10 mg. of thiamine chloride and 6 brewers yeast tablets each day, but her condition continued to grow worse. On the fourth day she was given a non-convulsive electric shock treatment with 4 cc. of a 10 per cent solution of sodium amytal. Only transient improvement was observed following the first three daily shock treatments. After the fourth treatment she became coherent and cooperative. After the fifth shock treatment she no longer required physical restraints and after the sixth treatment she slept soundly throughout the night, but she was somewhat dull and confused at times for the next few days. After the eighth and last shock treatment she showed no further symptoms of delirium although her serum bromide content was 224 mg. per 100 cc. of serum (Wuth method). According to Wuth(6) symptoms of intoxication occur when the serum bromide level exceeds 150 mg. per 100 cc.

Two cases of delirium associated with bromide (including case 6) and one with phenobarbital intoxication were treated with 8 to 10 daily non-convulsive electric shock treatments. These patients remained mildly confused and forgetful for a few days after all symptoms of delirium had disappeared. In bromide intoxication it usually takes from two to three weeks before the bromides are eliminated from the system and "reaction of delirium" generally clears up within two to six weeks. Results in our few cases indicate that the duration of the delirium is definitely shortened with non-convulsive electric shock therapy.

Group III—Psychoses Associated With Syphilis of the Central Nervous System

General Paresis.—Psychic as well as organic components are responsible for the mental symptoms of paresis. Except for intellectual deterioration resulting from brain damage, there is no known correlation between the anatomical destruction and psychotic symptoms. "Reaction of delirium" often appears as part of the organic reaction in this disease.

Changes in the intellect-sensorium field are usually so insidious that partial clouding of consciousness causes no emotional disturbances in many individuals; they remain contented and resigned to their lot. Consequently, the simple demented type of paresis, which is most common, often goes undiagnosed unless Wassermann tests are made,

or until it has advanced so far without being recognized that any kind of therapy proves ineffective. But in addition to the simple demented form, paresis also appears in agitated, expansive or depressive forms. In individuals who are inclined to be emotionally unstable, impairment of judgment and memory caused by organic brain changes produces increased irritability and emotional changes. A neurasthenic picture, with prodromal symptoms recognized only in retrospect, often appears long before general paresis is diagnosed. An emotional shock, injury or infection often precipitates or aggravates the psychosis. In Kraepelin's classical monograph on general paresis(7), it is stated that the history and the complement fixation tests are the chief criteria in differentiating paresis from delirium tremens and Korsakow's psychoses.

Such observations have suggested that the delirious reactions of paresis like those of other toxic-organic reaction types might likewise be favorably influenced by non-convulsive electric shock treatment used in conjunction with routine antisyphilitic therapy.

CASE 7.—E. W., male, aged 52, married, a janitor, was brought to the hospital in a confused condition. At the age of twelve he had been arrested for stealing and placed in a training school for boys. He had worked only at various odd jobs for short periods. At thirty-three he married, but soon afterwards left his wife to live with another woman. At forty-two, while he was resident at a transient camp a routine blood Wassermann was found positive. After a few months' treatment he considered himself cured and took no further treatment. Five years later he obtained a job as handy man at a church and his wife returned to live with him. During the past two years he showed no mental changes except that he developed an almost fanatical interest in religion. Two weeks before he entered the hospital, he fell off a ladder while at work, and fractured the os calcis in his right foot. He was taken to a private hospital, where he became irritable, removed the cast, and left the hospital against advice. When he returned home, he was quarrelsome, talked constantly and developed ideas of reference. Seeking protection, he went to the police and asked to be locked up, but they took him to the general hospital for observation. He was so confused and excited that physical restraints and strong sedation were required.

Examination of the eyegrounds showed optic atrophy, and the visual fields were constricted. The pupils were fixed to light, the deep reflexes were absent, and the Romberg test was positive. The blood pressure was 176/108. X-ray examination showed a fracture of the right os calcis. The blood and spinal fluid Wassermann tests were positive; the spinal fluid showed 19 lymphocytes, 76 mg. per cent protein and a paretic curve (5555421000). A diagnosis of general paresis with early tabes dorsalis was made.

Since he had hypertension and optic atrophy, malarial treatment and tryparsamide were considered contraindicated. He was given ten daily non-convulsive electric shock treatments with pentothal sodium two hours after injections of 30 units of regular insulin. He also received 10 minims of potassium iodide t.i.d., and 2 cc. of 1.5 per cent bismuth sodium tartrate intramuscularly twice a week. After the fourth shock treatment he became quiet and cooperative. Although slight euphoria persisted after the tenth shock treatment, his insight had improved decidedly. He remained in the hospital two weeks longer for observation and further antisyphilitic treatment. Since discharge he has continued to receive treatment (bismuth and neosalvarsan) in the out-patient department. When interviewed eight months after discharge he reported that he had returned to his previous occupation five months prior to this interview. He showed no evidence of psychosis at this time.

Five cases of general paresis were treated with non-convulsive electric shock therapy in conjunction with antisyphilitic chemotherapy. All showed varying degrees of clinical improvement (see Table 1). Since malarial therapy and tryparsamide were contraindicated in case 7, we consider his lasting remission highly significant. In the other four patients their affective and content disturbances definitely improved, but their symptoms of intellectual deterioration resulting from organic processes responded in a less striking manner. In all five cases the spinal fluid Wassermann reaction remained positive although the protein content and cell count were slightly reduced. We attribute the latter to the antisyphilitic treatment. A week or two later, each patient (except case 7) was given eight to twelve malarial chills; during the following two weeks one patient showed further improvement, one became worse and the other two remained essentially the same. The spinal fluid Wassermann remained positive and the changes in the protein content and cell count were not significantly altered. In this small series of cases the clinical and serological results obtained with the subsequent malarial therapy did not surpass those obtained with non-convulsive electric shock. All of the above patients have returned to their respective communities (save case

C. McC. who is still in a state institution) and are continuing to receive chemotherapy.

Although observations made from five cases are inconclusive, the results with non-convulsive electric shock therapy are sufficiently encouraging to warrant a continuation of this study.

Comment

Toxic-organic psychoses have for many years been treated empirically with different forms of shock. Based upon the familiar experience that unexpected remission of psychoses often occurred with intercurrent infections, the idea grew in the latter part of the nineteenth century to inject microbic products systematically in the hope of altering the course of toxic-organic as well as psychogenic psychoses. Believing that an active infection might produce more lasting remissions von Jauregg(8), in 1917, inoculated several patients suffering from general paresis with tertian malaria and obtained startling results. Since then, this treatment used in conjunction with specific therapy has become an accepted medical procedure. It is of interest to note that some workers(9) have also reported that schizophrenia often responds favorably to malarial shock treatment. Insulin was administered in sub-shock doses in the treatment of delirium tremens and morphine addiction before it was used in the treatment of schizophrenia. More recently some investigators (10) have advocated metrazol shock therapy for delirium tremens. Korsakow's psychosis has also been treated successfully with insulin shock(11). Several paretic patients who had failed to respond to malarial treatment were successfully treated by San Martin(12) with insulin sub-coma shock in conjunction with arsphenamine and bismuth. Kenyon *et al.* (13), have recently reported favorable results in general paresis with metrazol shock therapy. They conclude that these patients respond to metrazol in a manner similar to that of patients with psychogenic psychoses.

Many investigators consider the various forms of shock therapy as physiologic rather than as psycho-physiologic procedures. Yet Diethelm(14) has emphasized that "any present day somatic treatment needs to be evaluated from a psychobiologic point of view." The effectiveness of somatic treatment does not prove that the clinical symptoms are entirely due to somatic etiology. We believe that shock therapy is essentially a "treatment by excitation" through means

TABLE 1

Clinical Results in General Paresis with Non-Convulsive Electric (Faradic) Shock Therapy Combined with Antisyphilitic Treatment

Name Age Sex	Pre-psychotic personality	Previous antiluetic therapy	Onset of prodromal symptoms	Duration of acute symptoms and the type	Precipitating or aggravating factor	Results after electric shock	Results after subsequent therapeutic malaria
E. W.* 52 years Male	Poor	1 year (1931)	2 years	3 weeks Agitated	Fracture of os calcis	Complete remission	Not given
L. G. 51 years Male	Poor	1½ years (1940-41)	2 years	1 week Depressive	Fracture of metatarsal bones	Improved	Further improvement
C. McC. 42 years Male	Unable to elicit	Irregular for 15 years	Unable to elicit	1 week Expansive	Apoplexy with marked aphasia	Improved	Relapsed
C. R. 35 years Male	Poor	None	½ year	6 months Depressive	Total extraction of teeth	Improved	Essentially unchanged
M. H. 36 years Female	Apparently normal	1½ years (1931) Irregular (1940-41)	2 years	8 months Agitated	Unable to elicit	Improved	Essentially unchanged

*See Case 7.

of psychologic as well as physiologic stimulation(1).

The treatment of toxic-organic reaction types has been essentially a problem of management, for little is accomplished with the customary psychotherapeutic procedures. Although elimination of the underlying causal factor is of prime importance, the necessity of early treatment of mental symptoms has been minimized. It has been generally assumed that the psychoses disappear spontaneously when resolution of the organic disturbance takes place, but serious and long standing disorders may occur if the mental condition is not recognized and treated early. It is to shorten the duration of the "reaction of delirium" in the early stages that we have used a safe and simple shock procedure in conjunction with the routine medical procedures.

Discussion

Non-convulsive electric shock therapy has been employed in the treatment of psychoses because it is the least hazardous in current use. Since May 1939 we have given over 500 patients with psychogenic or toxic-organic psychoses more than 2,600 shock treatments without encountering a single traumatic complication.

Intravenous barbiturates alone are often efficacious when used in conjunction with psychotherapy(15). They are always used with this non-convulsive electric shock method. In using a sub-convulsive electric shock method, without barbiturates, to produce petit mal attacks, Androp(16) found that his patients failed to respond favorably unless the current was strong enough to produce amnesia. We also have found that excitement and fear are increased when the intravenous barbiturates were intentionally omitted. Similar reactions are frequently observed when coma or unconsciousness is not attained with pharmacologic or electric-convulsive shock methods. The fear and anxiety of the patient are minimized by intravenous barbiturates injected at the same time as the brief series of non-convulsive electric shocks are given. By this means, deep sleep is induced within 20 to 40 seconds from the time the treatment is started.

Although unconsciousness is not instantaneous, as in the convulsive electric shock method, fractures and dislocations, prolonged amnesia and recurring symptomatic epilepsy indicating definite brain damage, are obviated and no death has occurred with the non-convulsive electric shock method as we use it. If good results can be obtained without the danger of complications, as Caplan(17) remarks, the patient's objection to shock treatment is not a sufficient reason for vetoing its use.

Toxic-organic reaction types must be considered as symptom-complexes rather than disease entities. By treating only the somatic causative factor instead of the total disease including the psychic factor, the personality of the patient may become further disintegrated and the mental disorder may become irreversible. Since the underlying toxic factor in toxic psychoses can usually be more readily eliminated than the causal factors of psychogenic psychoses and since the onset in toxic cases is generally more sudden, it is not surprising that the toxic-organic conditions respond as well as, if not better than the psychogenic disorders to shock therapy.

Summary and Conclusions

Psyche and soma, interrelated, contribute to the "reaction of delirium" in toxic-organic psychoses. Delirious behavior is determined more by the type of personality of the individual than by the somatic changes in the brain.

Since the psychogenic psychoses showing delirious behavior appear to respond best to shock therapy, this method was employed in the treatment of acute toxic-organic psychoses. Non-convulsive electric (faradic) shock therapy, a safe, simple and inexpensive procedure, was given daily in conjunction with psychotherapy and the usual routine therapeutic measures. Thus "reaction of delirium" and the underlying organic disturbances were treated concurrently.

In 67 cases of psychoses associated with alcohol and other drug intoxications, the duration of "reaction of delirium" was definitely shortened.

In five cases of psychoses associated with syphilis of the central nervous system (general paresis), the acute delirious reactions responded favorably to this type of treatment. One patient showed complete remission.

Subsequent malarial therapy given to the other four patients failed to produce further striking clinical or serological improvement.

This preliminary study indicates that in "reaction of delirium" (toxic-organic psychoses) more effective results can be obtained by administering non-convulsive electric (faradic) shock therapy in conjunction with the customary routine medical procedures. Further investigations are being made.

BIBLIOGRAPHY

1. Berkwitz, N. J. Treatment of mental disorders with pharmacological and electrical shock methods. Minnesota Med., **24**: 25-30, Jan. 1941.

2. Berkwitz, N. J. Faradic shock treatment of the "functional" psychoses. Journal-Lancet, **59**: 351-355, Aug. 1939; Faradic shock in treatment of functional mental disorders. Arch. Neurol. & Psychiat., **44**: 760-775, Oct. 1940.

3. Piker, P., and Cohen, J. V. Comprehensive management of delirium tremens, including treatment utilized in 300 consecutive treatments. J. A. M. A., **108**: 345-349, Jan. 30, 1937.

4. Berkwitz, N. J. The treatment of delirium tremens with faradic shock therapy. Ann. Int. Med., **16**: 480-494, March 1942.

5. Joliffe, N. Treatment of neuropsychiatric disorders with vitamins. J. A. M. A., **117**: 1496-1500, Nov. 1, 1941.

6. Wuth, O. Rational bromide treatment: New methods for its control. J. A. M. A., **88**: 2013-2017, June 25, 1927.

7. Kraepelin, E. General paresis. Trans. by J. W. Moore. Nervous and Mental Disease Monograph Series, No. 14. New York, 1913.

8. Jauregg, Wagner. La malariatherapie de la paralysie generale et des affections syphilitiques du systeme nerveux. Rev. Neurol., **36**: 889-900, 1929.

9. Wizel, A., and Markuszewicz, R. Zweite Mitteilung uber die Versuche der Malariatherapie bei der Schizophrenie. Jahrb. f. Psychiat. u. Neurol., **46**: 255-261, July 20, 1929. Minnovitch, P. A., and Dorsht, A. Y. Treatment of schizophrenia with malaria. J. Nevropat, i. Psikhiat., **7**: 43, 1931. Abstr. Arch. Neurol. & Psychiat., **28**: 1434-1435, Dec. 1932.

10. Orenstein, L. L., Bowman, K. M., Kagan, J. R., and Goldfarb, W. Use of metrazol in the treatment of acute alcoholism. Am. J. Psychiat., **96**: 589-594, 1939.

11. Talkington, P. C., and Cheavens, T. H. Insulin shock therapy in Korsakoff's psychosis. J. Nerv. & Ment. Dis., **91**: 175-183, Feb. 1940.

12. San Martin, A. M. Associated arsphenamine, bismuth, and insulin in dementia paralytica. Rev. Med. de Chile, **69**: 380, July 1941, abstr. J. A. M. A., **117**: 1742, Nov. 15, 1941.

13. Kenyon, V. B., Lozof, M., and Rapaport, D. Metrazol convulsions in the treatment of the psychoses of dementia paralytica. Arch. Neurol. and Psychiat., **46**: 884-896, 1941.

14. Diethelm, O. Historical view of somatic treatment in psychiatry. Am. J. Psychiat., **95**: 1165-1179, March 1939.

15. Horsley, J. S. Pentothal sodium in mental hospital practice. Brit. M. J., **1**: 938-939, May 9, 1936. Berrington, W. P. A psycho-pharmacological study of schizophrenia, with particular reference to the mode of action of cardiazol, sodium amytal and alcohol in schizophrenic stupor. J. Ment. Sci., **85**: 406-488, May 1936.

16. Androp, S. Electric shock therapy in psychoses: Convulsive and sub-convulsive methods. Psychiat. Quart., **15**: 730-749, Oct. 1941.

17. Caplan, G. A convulsion during non-convulsive faradic shock therapy. Brit. M. J., **1**: 479-480, March 29, 1941. Communication: Brit. M. J., 647-648, April 26, 1941.

CONSIDERATION OF RESULTS WITH PSYCHOANALYTIC THERAPY[1]

C. P. OBERNDORF, New York, N. Y.

Although the term psychoanalysis is used to denote both a system of psychology concerned with the unconscious and a method of psychiatric investigation, it usually signifies a type of treatment devised by Freud for personality disorders. Generally people employ psychoanalysts in the hope of alleviating symptoms or of being cured of such disorders.

More than fifty years have passed since clinical psychoanalysis began to assume a place among psychotherapeutic systems. As an indication of its growth it may be mentioned that in 1942 in the United States six institutes were training psychiatrists to become analysts, with a total enrollment approaching 200 students.

However, few attempts have been made to evaluate results and limitations when psychoanalysis is applied in suitable cases by physicians personally adapted and competently trained. Most psychoanalytic treatment is private practice which has precluded access to the voluminous files in psychoanalysts' offices.

Inquisitive persons will resort to that alluring but notoriously misleading form of information—tables of statistics. Such have been published—perhaps unfortunately—by the most authoritative psychoanalytic institutes. It may well have been an error to report in statistical form such immensurables as psychoneurotic situations. Still, the error, if such it be, has been repeated periodically. The Berlin Institute tables of 1929 have been followed, and the method thereby presumably endorsed, by the London Clinic, the Chicago Institute and the Menninger Clinic.

Thus we find careful statistical results published by the Berlin Institute (1920-1930), the London Clinic (1926-1936) and the Chicago Institute (1932-1937), conducting small fee clinics. To these reports has been added that of 100 consecutive cases discharged from a private hospital—the Menninger Clinic at Topeka. Of somewhat different scope but reflecting the conditions of private psychoanalytic practice is a survey by Kessel and Hyman[2] of results of cases referred by them to experienced psychoanalysts for treatment.

All these reports have been consolidated and critically summarized by Knight[3] of the Topeka Clinic. Knight's composite tabulation of 952 cases shows a total of roughly 60 per cent discharged as apparently cured or very much improved and 40 per cent as unimproved, no change or worse. It is noteworthy how closely these totals agree with the individual percentages of the Berlin, London and Menninger clinics.

The proportion of cases thus recorded as cured or much improved by psychoanalysis certainly can be regarded as encouraging even though in each of these clinics (and presumably by the private practitioners of the Kessel and Hyman series) no cases were accepted for prolonged treatment unless they had been considered well adapted for psychoanalytic therapy.

Although the question of the standards, especially the theoretical criteria, to be used in delimiting the terms recovered and much improved must arise in evaluating results of therapy, I must refrain from too great attention to this fascinating and ever-changing concept of mental health. These criteria vary from the mere relief of symptoms, peace within the ego in its precarious position between the grinding stones of the super-ego and the id, adjustment of the ego to the environment or to the achievement by the patient of perfect mental rationality, and of freedom of the will both to act and to relinquish control, or at the other extreme,

[1] Read before the New York Psychoanalytic Society, May 26, 1942.

[2] Kessel and Hyman. Value of psychoanalysis as a therapeutic procedure. J. A. M. A., **101**: 1612-15, November 18, 1933.

[3] See Knight, Robert P. Evaluation of the results of psychoanalytic therapy. Am. J. Psychiat., Vol. 98, No. 3, November 1941, for interesting comparative results with various types of mental disturbance.

the capacity to pursue his ideal of happiness without too much rationality.[4]

Aside from philosophic or psychoanalytic metapsychological considerations, as presented in great length and with deliberation at the Marienbad Congress in 1936,[5] purely clinical criteria of therapy also vary greatly, as indicated in the excellent discussion of this subject by Hendrick.[6] For instance, in the same case of homosexuality one analyst might consider the result highly successful if he succeeded in reconciling his patient to the homosexuality, whereas another might feel that nothing short of a consistent transition to heterosexuality could be regarded as great improvement.

Unconsciously and sometimes consciously two types of success are in the mind of every analyst. He is interested and at times may become engrossed in the discovery of mechanisms responsible for the patient's symptoms—in other words, in the satisfaction of proof of his skill with Freud's system of psychology. On the other hand, as a physician, he seeks to improve the fundamental difficulties, to change the strength of conflicting, symptom-producing drives, etc. The former interest provides material for the greater proportion of psychoanalytic literature. In my personal experience some of the most gratifying and stimulating scientific work has been that in which I have been able to substantiate the dynamics of unusual psychic conditions. The patients often admitted that these discoveries were valid and interesting. However, they often received them unenthusiastically and impatiently—to say the least. One of my patients reflected this sentiment with the complaint that he "came to be cured of definite symptoms, not for the discovery of new ones."

In the various tabulations mentioned above, the results of therapy represent the opinions of a vast number of physicians as to the condition of the patients at the time of discharge. Sometimes they indicate impartial judgment of the results from the histories of the original therapists. That standards constituting cure should vary—some being high, some low, probably very few as rigorous as those of the London Clinic—is inevitable. Yet they probably represent a fairly acceptable mean of current ideas of recovery, namely, that the patient was able to return to his environment, better able to live there.

In estimating the efficacy of psychoanalytic treatment, one cannot avoid a comparison with other methods in the same or similar psychiatric conditions. Hinsie and Landis[7] have found that a basic rate of 40 in 100 can be established for patients discharged as cured from mental hospitals in the United States—precisely the percentage for the psychotic cases treated by psychoanalysis plus institutional régime at the Menninger Clinic. These figures concerning psychoses should at least be mentioned, for there is an increasing tendency on the part of psychoanalysts to apply psychoanalytic therapy in border-line and psychotic ambulatory patients.[8]

The same authors also make a comparison of the results of five years' experience in the treatment of analogous material at the Berlin Psychoanalytic Institute and the New York Psychiatric Institute. After discussing differences of material, criteria of cure, etc., they comment that "for anxiety and schizophrenia the designation of recovered or much improved shows that the New York Psychiatric Institute reports better therapeutic results and has had the patients under care only one-third as long as was true in Berlin."

The aforementioned studies, including Hinsie's, are deficient in that there has been no follow-up of the patients with the exception of the Kessel-Hyman group in a limited way. This is unfortunately impossible now for either Berlin or London but it is hoped that both the Chicago and Topeka groups will undertake this needed bit of research.

On the other hand a relevant follow-up study has just been completed by Wall and

[4] Hartmann, Heinz. Psychoanalysis and the concept of health. Int. J. Psychoanalysis, Vol. XXII, page 7, 1939.

[5] Symposium on the theory of the therapeutic results of psychoanalysis. Int. J. Psychoanalysis, 18: 125-189, April-July 1937.

[6] Hendrick, Ives. Facts and theories of psychoanalysis. Alfred A. Knopf, New York.

[7] Hinsie and Landis. Concepts and problems of psychotherapy. Columbia University Press, 1937.

[8] Oberndorf, C. P. The psychoanalysis of borderline cases. N. Y. State J. Medicine, June 1, 1930.

Hamilton [9] of 100 consecutive male patients suffering from psychoneurotic disorders treated in the Westchester Division of New York Hospital between 1927 and 1937. It seems fair to assume that all of these patients must have been seriously ill to have either sought or required hospitalization. They were treated by varied and appropriate program of activities, supplemented by frequent psychotherapeutic interviews, presumably by different doctors on the hospital staff. Four to fourteen years after discharge 46 patients were recovered, 5 much improved, 17 improved—making a total of 68 per cent who had benefited from the treatment—almost exactly the figures of the Chicago Institute.

So far as I know no psychoanalyst has been sufficiently vain to publish his own results in a series of consecutive cases. However, some information on the negative side can be gleaned from a study by Jameison and McNiel [10] of 17 patients admitted to a New York psychiatric hospital some time after or during a period of psychoanalytic treatment. They conclude that "the complete histories of the patients indicated that analysis had not been of any particular value in modifying the course of the disorder."

To supplement these printed records of psychoanalytic therapy, we have impressions gained through confidences of colleagues, rumors and opinions among analysts. Nor do we ignore the charges of inappropriate application of the treatment and emphasis on failures, and ridicule of recurring discord in psychoanalytic groups of psychoanalyzed members, by physicians and laymen unfavorably disposed to psychoanalysis. To counterbalance such overtly hostile attitudes we have also overenthusiastic endorsement by some thoroughly and some none-too-well analyzed ex-patients, none-too-well oriented laymen and zealous novitiates.

Notwithstanding dramatically publicized failures, psychoanalytic therapy has established for itself a position of growing respect and confidence in the minds of a large number of non-analytic psychiatrists, physicians and fair-minded laymen. Not less significant is the increasing number of converts to psychoanalysis from psychiatrists trained in other systems—*e. g.*, psychobiology—and the endorsement of recent, well-trained medical graduates who enter upon psychotherapy with a fresh and clean, albeit highly critical judgment. In the hope of improving results through clarifying the scope and investigating some of the frequent pitfalls of psychoanalytic therapy, this paper is presented.

Length of Treatment

In the tabulations already mentioned there is little to indicate to what extent favorable results depend upon the duration and/or the depth of psychoanalytic therapy. Glover [11] analyzing the statistics of the London Clinic concludes that "certain types of hysterical disorder can be satisfactorily treated in one and one-half years to two years."

It may be generally inferred from all reports and the trend of discussion in psychoanalytic meetings that long analyses are desirable and presumably the most effective. Ernest Jones excludes consideration of the possibility of permanent analytic improvement, even of anxiety cases, in patients receiving less than one hundred sessions. Nevertheless it is worthy of note that lengthy analyses did not prevent the development of psychoses in Jameison and McNiel's series of 17 psychotic patients, 7 of whom had been under analysis from two to seven years—the latter time period occurring, it is whispered, more often than is acknowledged. Notwithstanding this emphasis on the value of lengthy analyses, I should like to refer to two cases treated with heretic brevity, choosing as examples one reported in 1911,[12] and the other seen within the past year.

The first patient was a woman, aged thirty-five, who came for treatment while I was taking a country doctor's practice for a few weeks during

[9] Hamilton, Donald M., and Wall, James H. Hospital treatment of patients with psychoneurotic disorders. Am. J. Psychiat., Vol. 98, No. 4, January 1942.

[10] See Jameison and McNiel. Some unsuccessful results with psychoanalytic therapy. Am. J. Psychiat., 95: 1421-48, May 1939, for details of these cases.

[11] Glover, Edward. An investigation of the technique of psychoanalysis, p. 114. Balliere, Tindall and Cox. 1940.

[12] Oberndorf, C. P. Case of hallucinosis induced by repression. J. Abnormal Psychology, February 1912.

the summer of 1910. The patient's background was bad. The father had been in a mental hospital on three occasions with manic-depressive psychosis; the mother was weak, indifferent and yet critical. The patient complained of great anxiety, sleeplessness and suffered from hallucinations of seeing skeleton heads and snakes which would appear to pop out at her from the wall. She also had a severe compulsion to kill her eight-year-old daughter and at one time had actually had her hands around the sleeping child's throat ready to choke her.

The symbolic value of the skeleton heads and snakes were immediately apparent to me, even as a novice, as indicating preoccupation with death and sexuality and gave the clue to the immediate clandestine situation responsible for the anxiety. The patient had been unfaithful over a long period with her husband's best friend. The skeleton symbol applied not only to the death of her daughter but of her husband as well.

If a designation for the disease picture be helpful, I think it could be thrown into the general category of agitated depression with marked anxiety and compulsive symptoms.

Treatment was begun in the country but because of the distance from New York the patient could pay visits only twice a week—sometimes only once a week—when I returned to the city. Within five months the hallucinations disappeared completely and the anxiety almost entirely. During this time the unsuspecting husband invited the patient's lover to come to reside in his own house. The patient was able to withstand the lover's advances, her antagonism toward her daughter subsided and within a year she was restored to a sexual compatibility with her husband toward whom for years she had entertained a strong antipathy.

A difficult economic situation caused a slight flare-up of the anxiety some two years after treatment had been discontinued but this also disappeared after perhaps eight hours of psychoanalytic investigation. The patient has remained well since that time. Although I have not seen her, I have heard from her regularly each year. To me this very early case with a perennial note at Christmas has often served as an encouragement in the face of long and stubborn battles with less satisfactory results in later years of practice.

The second case concerns an unmarried woman, aged thirty, referred in 1941 for a compulsion to eat pounds of peanuts and sweets for which her physician could find no organic basis. The symptom at once suggested oral gratification as a substitute for fellatio which surmise subsequently proved correct. The excessive need for food disappeared after perhaps ten hours of treatment and the patient promptly lost twenty pounds in weight.

The analytic situation was fraught with many difficulties. The patient, a Jewess, had been seduced when twenty years old by her Christian employer, a cultured man, more than thirty-five years her senior. She had left her home in Baltimore, came to New York with him and remained his mistress for nearly ten years. She had gradually become so embarrassed by the comments of people when they regarded her as his daughter that she was attempting to discontinue her liaison at the time she came for treatment, even though this made life for her extremely lonely. The nature of her liaison and the fraudulent denial of her religion at her employment had removed her from all normal friendships and contacts.

It was apparent that her lover represented unconsciously a flight from and attachment to her father. Notwithstanding this long-standing unconscious intrapsychic situation and the complicated external situation the patient after about forty hours of treatment broke completely the long standing attachment to her elderly lover, began to make normal contacts and after less than a year married a man of suitable age and of her own faith.

Proof of the permanent benefit from long and deep analysis is not founded upon any systematic check of the condition of these patients after discharge—let us say after a period of five years. Sometimes it seems that too persistent and too thorough preoccupation with the unconscious keeps alive the strife between the warring categories of the personality and retards those synthetic processes which make for ego integrity. While correction from the unconscious may increase the patient's insight it does not necessarily increase his ability to use that insight *in situ* nor for foresight. Certainly too great attention by the physician to the minutiæ of mechanism tends to distort the clinical perspective of the patient's malady.

Had either of these cases mentioned above been in a position to come for analytic treatment five times a week I should have advised it and think I should have been well satisfied had the results reported been obtained within a year on the basis of twenty hours a month.

The fact that such happy results were obtained after brief analyses must not be construed as an advocacy of this procedure in even a minority of cases. No arbitrary time standard can be established in the multiphased problems accepted for psychoanalytic therapy. Each case necessarily presents its particular structure, its goals, its internal and external difficulties. In many these can be touched effectively only by long and deep therapy. Even then in certain exceptional cases analyzed for several years, four or five times a week, little impression is made on

the pathological condition.[13] Such discouraging outcomes occur far more often than is theoretically indicated or clinically reported with the highly intellectual, narcissistic individuals whose narcissism centers in and is strongly reenforced by an extreme faith in an over-valuation of logic. The impossibility in analytic therapy of proceeding with any measure of logical sequence affords these individuals the rationalistic opposition to analysis which is so difficult to undermine. Some of my most disheartening results have been with patients of this type.

Discontinuation of Analysis

Freud himself had never been too sanguine as to the clinical results of psychoanalytic treatment and a widely circulated witticism among analysts in Germany,—"Die Nach-Analyse der Analyse" (the after-analysis of the analysis), indicated that such scepticism was widespread.

Cases where the patient discontinues therapy before the analyst feels he has attained the maximum therapeutic result have received little attention. Of the patients seen by me in the past two years I have selected thirty, each of whom had visited me for over thirty hours—most of them for over several hundred hours. Thirty per cent of these patients have had previous treatment by psychoanalysts; all but one are now receiving active psychoanalytic treatment. It is not easy to ascertain to what extent perennial analytic patients exist. I refer not only to those who remain with the same analyst but those who drift from one to another.

My interest in the topic of discontinuation of psychoanalytic therapy was reactivated some three years ago. Then a patient first seen by me in consultation in 1929 returned after having been psychoanalyzed for longer or shorter periods by four recognized analysts—all of whom had had the benefit of organized psychoanalytic education. He was still suffering from the symptoms originally presented, namely, a fear of fainting when he had gone any distance from home, fear of subways, etc.

[13] See Freud, Sigmund. Analyses terminable and interminable. Int. J. Psychoanalysis, Vol. XVIII—especially pages 377 and 395. 1937.

The reasons or rationalizations for discontinuation were attributed by the patient to Analyst A's going on vacation and refusing to take him back; the nervous personality of Analyst B prevented the establishment of any confidence; with Analyst C there was no relief but rather intensification of the symptoms after eight months of analysis five times a week; Analyst D was apparently disinclined to venture an orthodox analysis in the face of the experiences of the previous analysts. Perhaps this was the wisest thing to do at the time.

At present I am treating, as the fourth analyst, a man of forty suffering from a fear of blushing and many other compulsions. His first analysis was in 1922 and the third in 1940. In both cases the patients were intelligent, young individuals at the time they first applied for treatment—the first an engineer and the second a lawyer. Each suffered from anxiety-laden compulsions and in the external situation no factors existed which could be called definitely obstructive to the progress of a cure.

The causes for discontinuation of analysis are varied. One frequent factor is the failure by the patient to get desired or fantasied benefits which he expects within a certain period. I have found that cases of conversion hysteria and anxiety neurosis respond more quickly and are relieved of their distressing symptoms more easily. For that reason they are apt to be considered cured and the success is often loudly acclaimed by both patient and family.

Tapering Off Treatment

In addition to the question of discontinuation of analysis by the patient the situation often arises where the acute symptom or major problems have subsided and it seems desirable to taper off analysis by seeing the patient only once or twice a week. Perhaps the practice of tapering off may be interpreted as counter-transference in which the paternalistic analyst is unwilling to give the patient full liberty and finally cut the attachment. One analyst comments that it is a device necessitated by the feeling of insecurity of the analyst. The objection to this form of procedure may be that it protracts transference. This, however, is gradu-

ally changed from one actively libidinized to a dependency transference or merely an intellectual dependency on the analyst.

Tapering off is directly the opposite to the concept of setting a time limit to the analysis proposed by Rank but today finding little favor as a technical device. The time limit was supposed to force a dawdling patient into more active cooperation through the threat of depriving him of the benefit of transference, dependency, cure.

Although at the time fixed for the termination of analysis the patient's anxieties are supposed to have entirely disappeared, this is rarely the case. Instead the fixation of a time limit may be utilized by the patient as an excuse for perfunctory cooperation until he is honorably discharged still clinging to some bitter-sweet symptoms. In the tapering off process the supportive features of psychoanalytic therapy are protracted, and whatever anxieties arise between visits can be reexamined.

Psychoanalysis to be effective cannot remain merely an investigative and interrogative process but must be synthesizing and reeducative as well. Hence, the patient is ready to discontinue, sometimes with a prod from the analyst, when he feels that he is able to rely on himself. Tapering off may even take the form of petering out—both patient and analyst realizing that they have obtained the most they can from each other.[14]

Avoidance of Hospitalization

A stay in a mental institution may terminate a psychoanalytic treatment as already indicated. On the other hand, from verbal communications of colleagues and from my own experience, I am sure many patients have been enabled through psychoanalysis to avoid surgical operations, prolonged medical treatments and hospitalization in mental hospitals. I can report with almost absolute certainty that in 5 of the 30 cases mentioned before, hospitalization in mental sanitaria was avoided because of analysis. These patients might have been designated as neurotic or schizophrenic dependent upon their geographical location—the former diagnosis would have been the most probable outside, the latter inside a mental hospital.

One should not minimize the social advantages and economic benefits which the average person retains through not becoming a patient in a mental hospital. Public opinion continues to stigmatize persons who have once been definitely identified with insanity. Keeping patients in society and actively engaged in useful and remunerative occupation is by no means the least of the many advantages which psychoanalytic treatment offers to these psychotic and borderline cases. With them the tapering-off process, with its supportive elements, is often particularly valuable after intensive psychoanalysis.

Supervision of Experienced Analysts' Work

There exists a certain kinship and parallelism in the choice of and results with therapy in medical and surgical conditions and the psychoneuroses and allied disorders. However, two fundamental differences remain. It is far more difficult to gauge the severity of the illness in psychoneuroses and far greater variation is found in the application of any method of psychotherapy than in general medical procedures. This must be so in a method which involves such continuous and intense inter-personal reactions between doctor and patient.

One of the peculiarities of psychoanalytic practice is that the analyst's work is done in isolation, sometimes even in secrecy from the patient's family. For this reason he is subject to none of the pertinent critical comments to which other physicians are exposed, such as surgeons, whose work can be observed by their peers. The analyst's only immediate critic is his patient and such objections as he offers are more or less rightly considered as resistance to the process or to the analyst as a surrogate. As such they must be interpreted. Thus the psychoanalyst is in the position of a chessmaster play-

[14] In connection with this paper I sent a questionnaire to about twenty-one analysts with over twenty years experience and am indebted to sixteen for replies. A résumé of their opinions on many of the questions broached in this paper will be presented in the future. Concerning the advisability of tapering off analysis, as on all other topics, there is wide divergence of opinion.

ing eight or ten boards simultaneously with relative novices. The worst he can get in the psychoanalytic contest is a stalemate or a draw, provided the opponent does not become disgusted with the length of the game or the prospect of defeat and throw over the board—that is, discontinue the analysis.

It is worth considering whether at times the psychoanalytic chessmaster may not become more absorbed in teaching his opponent the movements in chess, which he knows so well, than in winning the game. Such a tendency might easily develop into a policy, become a habit, of which the physician remains quite unaware. And in the psychoanalytic chess contest there is no umpire, no official timekeeper.

Freud in his later years proposed that every psychoanalyst resubmit himself to an analysis after five years; but so far as I know this has not been widely adopted by the profession. Certainly character habits of which the physician is unconscious might be revealed during such re-analysis. Another innovation in psychoanalytic education is the supervision of at least two cases being analyzed by advanced students who have completed personal analyses. This practice has been considered so valuable by recent graduates of psychoanalytic institutes that they may increase the number of supervised cases to six or more. Furthermore they sometimes continue to consult one of their control analysts when they encounter difficulty with cases several years after graduation. Both such post-graduate control and Freud's proposal have a bearing on the following idea.

Would it not be desirable that every analyst consult with another in the nature of a limited control of a current case at least once every two years? An alternative of this general idea would be that in any case where the patient has been under analysis, for let us say two to three years, the situation be reviewed by one or possibly two consultants chosen by the analyst. While control of the younger analyst might reveal certain errors due to inexperience, the review in the case of the older analyst might indicate certain rigid or fixed tendencies which he had developed. Here such a practice would be in the nature of a brief control of post-post-post-graduates—for the real analyst, in common with the real physician, never ceases to be a student. In my own experience the cases where I resorted to such reviews of my work were only at the request of patients when the analysis had reached the stalemate stage.

The average psychoanalyst's vanity, and here I would include myself in the average, is such that he seldom would be apt to resort to a supervisory review were such a procedure not usual and general. If the idea of revaluation of progress by others, of at least one case every two years or in most of those cases who have had two to three years of continuous analysis, should become accepted as common practice, the implication of any lack of attention or skill might be lessened and eventually cease to exist. This idea—and may I emphasize that it is an idea I am suggesting, not a system—perhaps imposes upon the analyst a check beyond that demanded of medical men but the conditions under which the analyst works, as I have already stated, are exceptional.

Summary

This presentation, bringing purely clinical problems of psychoanalytic therapy to the foreground, has been made in the hope that it will encourage a more open consideration of the clinical results of the method. Through group comparisons of variegated clinical experiences we may establish somewhat more accurately the method of procedure best suited to specific types of psychopathological reactions. I will not say for specific diagnoses because I think that clear-cut cases of any form of psychoneurosis are rarely seen.

In summarizing, I would like to mention the following points: (1) that reports of treatment from psychoanalytic sources presented in statistical form indicate that approximately 60 per cent of all cases were considered recovered or improved; (2) that this percentage closely approximates that reported from institutes where intensive psychoanalysis had not been used; (3) that at times strikingly satisfactory results can be obtained by brief treatment conducted on strictly psychoanalytic lines—so much so that (4) the question arises whether, when there

is too great or too deep preoccupation with the unconscious, this does not retard synthesis between conscience and primitive drives; (5) that while lengthy and deep analyses are today most in favor, there has been no investigation to correlate the permanency and quality of result with the length and/or depth of treatment; (6) analyses which are discontinued are frequent and tend to lessen confidence in psychoanalytic method. The reasons for such interruptions have not been specifically or widely studied; (7) the tapering off of treatment appears valuable especially in border-line and psychotic cases that are being treated in increasing numbers by psychoanalysis; (8) of the reaction types where psychoanalysis seems to encounter most favorable results may be mentioned anxiety neurosis and conversion hysteria; least favorable is the intellectual narcissist and the individual who recedes into deep depression or expands into a manic hyperactivity when faced with analytic revelations; (9) from my experience cases who avoid hospitalization because of their analyses far outnumber those who require hospitalization after analysis.

Many of this psychoanalytically trained audience may interpret most of my presentation as being due to my own feeling of insecurity, or less charitably, as being dependent on real defects in skill. Concerning the doubts, it cannot be denied that some of the high hopes regarding the wide scope and certainty of results with psychoanalytic therapy entertained by others as well as myself have not been sustained. That enormous and momentous although no essentially basic differences of opinion exist among analysts in many matters is indicated by replies to the questionnaire already mentioned. Perhaps if greater caution and sobriety has developed concerning the range of psychoanalysis, it is rather that the crackling flames of fresh fire have settled down to a warm and steady glow.

Nevertheless a certain amount of discomfiture or incertitude about theory, methodology and results must exist among many analysts. Nothing else could account for the numerous and violent controversies in psychoanalytic groups here and abroad, the frequent attempts to introduce new systems, the polemics emphasizing some phase of the general theory as specific or all important. These differences are not sufficient to warrant a regression of those who wish to reject portions of psychoanalytic theory to the infantile level of sullen petulance, nor to indulge in a temptation to form new groups, nor to succumb to the soothing solace of self-analysis.

Possibly a general over-enthusiasm thirty years ago, based upon such cases as the hallucinating patient cited above, may account for some of the present discomfiture. Such successes with the clear cause and effect relationship were dramatically impressive when they first appeared in psychoanalytic literature and when psychiatrists first became acquainted with the stimulating vista opened by psychoanalysis. Concerning present difficulties one of Freud's pithy epigrams seems particularly apt at this point—"if we cannot see clearly, let us at least see what is unclear clearly."

Perhaps a greater frankness than is sometimes customary occurs in this paper, but may it be without offense to any of my listeners and to the eventual benefit of the clinical application of psychoanalytic therapy and its far-reaching influence upon the management and restoration to health of psychiatric patients.

SUBCONVULSIVE ELECTRIC SHOCK TREATMENT OF THE PSYCHOSES[1]

WALTER ANDERSON THOMPSON, M. D., C. M., ORANGEBURG, N. Y.

This is a report of the use at Rockland State Hospital during the past two years of an electric machine producing a shock of a "subconvulsive" type. The machine and its employment in "treatment of functional psychoses" were described in 1939 by Berkwitz(1).

The current generated by the machine is faradic, of high-voltage, low amperage type. The voltage produced amounts by estimation to approximately 30,000 volts, the amperage 5 milliamperes. As indicated by Berkwitz(4) this voltage decreases rapidly with closure of the circuit. A rheostat permits varying of the voltage, so that it may be given in graduated doses or amounts from 5,000 to 30,000 volts. The amperage remains more or less constant.

The machine used was constructed in the electrical department of the hospital and is illustrated in Fig. 1. Eight dry cells are arranged in a series, with a spark-coil inserted to step-up the voltage. As mentioned above, a rheostat (100,000 ohms) is employed so that the voltage may be increased or decreased at the outlet. An electric lead is inserted into one of six plug-ins associated with the rheostat, a second lead into a plug-in connected with the spark-coil. A push button is used to make and break the current.

An electrode is attached to each lead. One is connected to the scalp of the patient (the so-called head electrode), the other to a distant portion of the body, such as the leg (the leg electrode). The latter was varied from time to time during the early period of the use of the machine to determine if there was a differing result with each location. For instance the second contact was made at the neck, the thorax, the arm or the leg; in addition it was also tried at a second point on the scalp so that a double scalp connection resulted. These various positions were tried but the one most extensively and finally used, was the head-leg series. Essentially there did not appear to be much difference in the results with change of location, with the exception of the double head series. This had little appreciable effect, it being attributed to the fact that transmission of the current through the brain only was comparatively painless and innocuous.

When the first shock was administered to the patient a dosage of 5,000 volts was given by making and breaking the current. By means of the outlets from the rheostat the voltage was increased 5,000 volts at a time until the maximum of 30,000 volts was reached. This comprised the first treatment; thereafter the patient received the maximum dosage at each treatment. A treatment was given every other day and in some cases it was given every day. As experience was gained the maximum current was given as the first treatment without preliminary stepping up, as it was noticed that the effect of lower voltages were too insignificant for results. One may think that 30,000 volts is a tremendous voltage to be given at any one time, let alone without gradual increase, but I can assure you that because of the very low amperage, it is not dangerous.

When it was first inaugurated a patient usually received about 30 shocks as a course of treatment. With experience it became evident that this procedure had no beneficial effects as far as the psychosis was concerned. Subsequently patients were given shocks as indicated by the behavior response. This would amount in some instances to one shock a week, or one every second day for several treatments, or again daily shocks for a week or longer.

The action on the patient is to cause a tetanus-like convulsion. The individual remains conscious although the eyelids are forcibly closed by contracture of the eye and facial muscles. Most of the skeletal muscles forcibly contract in a like manner so that the body is in mild extension, with the head thrown backward. In other words the action is subconvulsive. During the treatment some patients struggle but the

[1] Read at the ninety-eighth annual meeting of The American Psychiatric Association, Boston, Massachusetts, May 18-21, 1942.

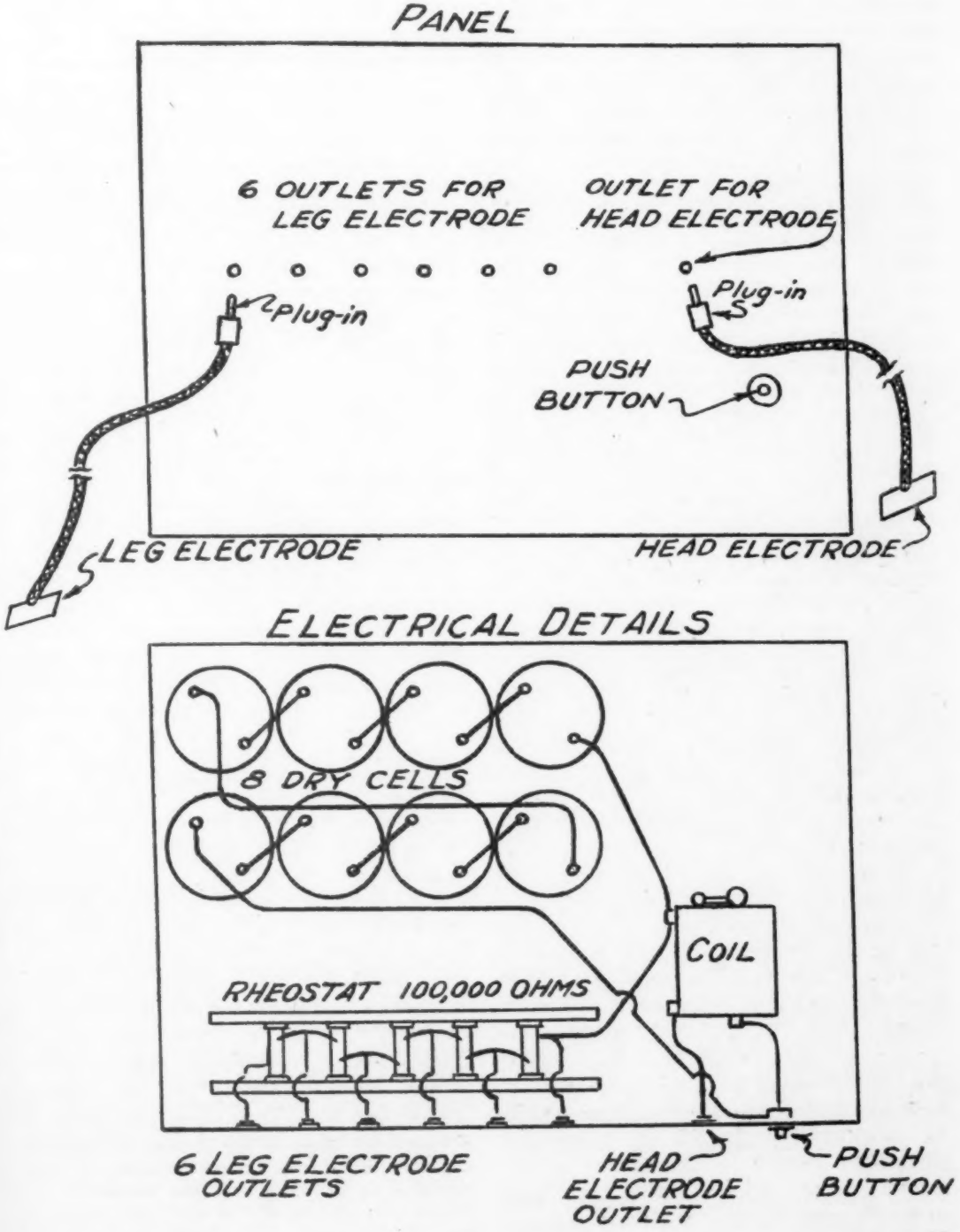

PANEL
6 OUTLETS FOR LEG ELECTRODE
OUTLET FOR HEAD ELECTRODE
Plug-in
Plug-in
PUSH BUTTON
LEG ELECTRODE
HEAD ELECTRODE
ELECTRICAL DETAILS
8 DRY CELLS
COIL
RHEOSTAT 100,000 OHMS
6 LEG ELECTRODE OUTLETS
HEAD ELECTRODE OUTLET
PUSH BUTTON

FIG. 1

great majority retain the rigid posture. When the current is broken there is immediate and complete relaxation of all muscles. As noted below, contracture of the facial and neck muscles causes cyanosis, due to inability to breathe, but breaking the current immediately restores respiration. While the current is made contraction continues, when it is broken it no longer results.

It became customary to treat the patient with one of two methods. First, the current was made and held for from 20 to 30 seconds, then broken. This was repeated several times. Secondly, the current was made and broken rapidly, so that it passed through the patient for about a tenth of a second; this procedure was repeated a number of times, about 15 or 20. One form of treatment functioned better in one case, the other in other cases. It was an individual procedure and I could not state that one was better for a certain psychosis, the other for another psychosis.

A large variety of psychotic cases was treated, including arteriosclerotics, psychopaths, schizophrenics, manic-depressives, epileptics etc. It became evident that from the physical standpoint there were practically no contraindications, except those usually indicated in any strenuous treatment. It had no apparent direct effect on the heart and only a slight rise in blood pressure followed its use. This was an initial rise, to be followed by an immediate return to the basal figure of each individual case. Therefore it could be used quite safely in those with arteriosclerosis. The blood sugar showed no appreciable change, although following prolonged shocking there was at times a slight increase. There were no injuries to the long bones, joints or vertebrae as in metrazol or other convulsive therapies.

Patients who were acutely ill were of course not treated, nor were those with tuberculosis. However, as stated previously, epileptics were among those treated. There was no increase of seizures due to the procedure.

Subconvulsive electric shock therapy does not cure mental illnesses, but it became evident that it was of value in controlling anti-social behavior, including destructiveness, combativeness, untidiness, self-mutilation and at times, although rarely, hallucinations and delusions. On the whole the patients did not like the treatment and I believe the results obtained were on a conscious basis. A few patients did not object to it and a few appeared to enjoy the experience, asking for a treatment from time to time. One or two developed delusions in association with it, but these were not persistent.

An attempt was made to ensure that the treatment was not considered as a form of punishment. With experience, when it was noted that combative tendencies were controlled in many cases, patients developed the impression that it was given only in such instances. Employees were prone to harbor this idea and to use it as a threat, but every attempt was made to prevent this attitude. The treatment is not as uncomfortable as mechanical restraint or other shock procedures, especially metrazol. I believe that it can be compared to the total-push therapy of Tillotson(2) and Myerson(3).

The treatment has definite value in eliminating the use of restraint and seclusion by better controlling anti-social behavior. The women's acutely disturbed service at Rockland has a capacity of 660 patients. Before inaugurating this treatment there were approximately 115 items of restraint or seclusion in use daily. After several months with subconvulsive electric shock therapy, together with certain other changes, the number was reduced to about 5 per day.[2]

It may be well now to quote a few individual cases, illustrating the various types of symptoms controlled. These cases will be those more successfully treated and it must be realized that it is not equally effective in every instance. In fact if a patient is too deteriorated mentally it will probably have no effect. In the present series there was no selection of cases.

CASE 1.—A. P. Female, aged 32 on admission February 18, 1938. Diagnosis—dementia præcox, hebephrenic type. Since admission this patient had been idle, dull, indifferent, silly in attitude, untidy in appearance, fingering her clothing continuously and decorating it with various materials, at times combative to an extent requiring mechanical restraint. Her interest in the usual ward activities could not be obtained. She persisted in lying on the floor and could not be induced to sit in a chair.

[2] A review of all methods used in reducing restraint and seclusion will be made in a subsequent communication.

Until November 1940 there was no change in her condition. At that time subconvulsive electric shock treatment was begun, a shock of the rapid oscillating type being given every other day. After the third treatment there was noticeable improvement. She became more alert and responsive, began to cooperate in requests and commands and no longer rolled about the floor. She became tidy and less apathetic but remained silly. Her quarrelsomeness disappeared so that visits by relatives, which had been impossible, became enjoyable. A total of six treatments was given. Her improvement has been maintained with one exception three months ago when she again received six shocks.

CASE 2.—N. B. Female, aged 31 on admission July 19, 1939. Diagnosis—dementia præcox, paranoid type. Since admission this patient has had frequent spells in which she would become extremely homicidal. She developed delusions of persecution towards the ward personnel and would become threatening and aggressively dangerous. Her delusions were a result of hallucination, voices accusing her of various things. Frequently she was so actively homicidal that restraint or seclusion was required to protect others. After eight shocks of the long time period type she became more stable and after a second course, repeated a month later, talked more freely, discussed her problems and became amenable to other therapy. Her delusions and hallucinations disappeared and since July 1941 she has been stable, a helpful worker on the ward and is considered greatly improved. This is one instance where delusions and hallucinations disappeared with the treatment. However, I feel certain that this type of electric shock treatment does not directly influence delusions or hallucinations.

CASE 3.—H. G. Female, aged 18 on admission September 26, 1938. Diagnosis—psychosis with psychopathic personality. Five previous attacks. Since her admission this patient had been a very difficult administrative problem. She was combative, disturbed, impulsive, resistive, prone to swallow articles or insert them in her vagina. Several operative procedures were necessary for removal of such foreign bodies. She would break furniture and windows often in retaliation for imagined wrongs. For long periods she would be in restraint as this was the only method of successfully coping with her tendencies. Previous to the shock treatment she had been in a protection sheet for several months. Kind handling was useless as she was always sullen and rebellious. Following one week's treatment of daily, long-period shocks she became an almost model patient, cooperative, agreeable, pleasant and helpful on the ward. There have been two minor outbursts since the first course in February 1941, treated with one or two shocks, but essentially she is greatly improved and easily managed.

CASE 4.—C. D. Female, aged 13 on admission March 18, 1937. Diagnosis—psychosis with psychopathic personality. From the first day of admission to the childrens' division of the hospital, she was a problem and with experience she became more difficult to care for, being always in some form of difficulty. She had been homicidal, suicidal, destructive, quarrelsome, vindictive, resistive and extremely uncooperative. She had a sullen attitude, was moody and almost a duplicate of the previous patient. In fact frequently they would plan mischief together. Because of her behavior she often was in mechanical restraint or receiving hydrotherapy, needless to say without effect. For some months before the treatment was begun she, too, was in a protection sheet. Daily, long-period shocks were administered for one week, following which her attitude completely changed. With the exception of one outburst she has remained stable for eight months, being at the present time neat, helpful, cheerful and pleasant. She has lost her surliness and moodiness, is not combative nor dangerous.

CASE 5.—E. R. Female, aged 23 on admission March 4, 1936. Diagnosis—dementia præcox, hebephrenic type. This patient was given the treatment because she had the pernicious habit of picking her skin. Her arms and legs were covered with many scars and abrasions of old and recent injuries. It did not appear to be a self-mutilation symptom because of depression, but rather an idle habit associated with somatic hallucinations. She received shocks every other day of the acute, oscillating type for two weeks. The symptom disappeared and has not returned; she is more alert, is aware of her surroundings but remains unimproved otherwise.

Altogether 213 patients, all females, received the treatment. The status of each case was recently reviewed and 65 per cent have continued to show some degree of improvement. Let me stress here that I refer to hospital adjustment and not improvement in psychotic symptoms. I am convinced that the treatment is of no practical value as a therapeutic agent, but it is of definite help in improving antisocial behavior, such as combativeness, destructiveness, self-mutilation, etc. I believe there is little use in presenting statistics as the improved status may not be persistent; suffice to say that like most treatments which do not cure, it is necessary to repeat it in some instances.

It was mentioned previously that the use of mechanical restraint and seclusion can be reduced by the use of the treatment. In addition it has been possible to reduce the amount of destruction of clothing, linen, windows, etc. In the service where the treatment was given it was reduced by 25 per cent, a considerable saving. At the same time there was a reduction in the number of accidents, particularly of the more severe type.

CONCLUSION

In conclusion, subconvulsive electric shock treatment by faradic current may be recommended for those patients who are disturbed, destructive, combative or otherwise difficult to manage. It has been used only in chronic cases but I believe if used early in the course of the disease, it will aid in preventing development of these bad habits. The beneficial effects appear to be on a reality basis and due to the associated discomfort. It must not be used as punishment and careful watch against employment of it as such is to be guarded against. It aids in eliminating restraint, reducing destruction and preventing accidents.

BIBLIOGRAPHY

1. Berkowitz, N. J. Faradic shock treatment of functional psychoses. Preliminary report. J. Lancet 59: 351-355, Aug. 1939.

2. Tillotson, K. J. The practice of the total push method in the treatment of chronic schizophrenia. Am. J. Psychiat., 95: 1205-1213, Mar. 1939.

3. Myerson, A. Theory and principles of "total push" method in treatment of chronic schizophrenia. Am. J. Psychiat., 95: 1197-1204, Mar. 1939.

4. Berkwitz, N. J. Faradic shock in treatment of functional mental disorders. Arch. Neur. & Psychiat., 44: 760-763, Oct. 1940.

SPINAL INJURIES IN SHOCK AND EPILEPTIC CONVULSIONS[1]

JOSEPH E. BARRETT, M.D., JAMES B. FUNKHOUSER, M.D., AND
W. ALLEN BARKER, M.D.[2]

Vertebral fractures, which result from convulsions in the various methods of shock therapy, have caused some observers to question the advisability of such treatment.

Although a few such injuries had been reported earlier(1), the announcement by Polatin and his colleagues(2) in April 1939 that 43.1 per cent of their cases showed spinal injuries from shock treatments with metrazol certainly modified the enthusiasm of many for this form of treatment. A number of additional studies have been made in regard to this complication, techniques have been improved, and considerable progress has been reported.

Bennett and Fitzpatrick(4) reported vertebral fractures in 47 per cent of their cases; Krause and Langsam(5) 42.6 per cent; Shatz and Kohnwalter(3) 34.9 per cent; and Easton and Sommers(6) 23 per cent. This progressive lowering of the incidence of this type of injury seems to have resulted from improvement in the technique of restraining patients during the convulsive seizure. Hamsa and Bennett(7) have reported favorably regarding such an improved method.

Electric shock therapy has in many places replaced the use of metrazol and coincidentally there seems to have been a reduction in the number of vertebral fractures. Worthing and Kalinowsky(8), reporting from personal communications with several clinics, say "The frequency of this complication in electric convulsive treatment was less than one-fourth that in metrazol treatment," but state further that there was an incidence of 10 per cent in their earlier cases before the introduction of their hyperextension technique. They introduce this as evidence that vertebral fractures are less frequent in electroshock therapy, "even without precautions," than they are in metrazol-produced convulsions.

In mental hospitals there are many patients who have non-induced convulsions, principally epileptics. Do these patients have vertebral fractures? Are they different from those resulting from metrazol and electric shock convulsions?

Moore and Winkleman (9) reported that 66⅔ per cent of a group of 12 epileptics showed definite compression fractures similar to those found in metrazol convulsions. Worthing and Kalinowsky found only two vertebral fractures in a study of 42 epileptics and neither of these was in the mid-dorsal vertebræ, where metrazol fractures are most frequently found.

Pearson and Ostram(10) and Worthing and Kalinowsky(9) consider the epileptic convulsions to be different from those produced by metrazol because they found the fractures in different spinal locations both in their own cases and in the reports of others(11).

Most cases of vertebral fracture do complain of some back pain or discomfort but we have not been able to find any neurological changes, and we are unable to find that any such changes have been reported(12).

We present here a study of a series of cases who have had major convulsive seizures.

Plan of Procedure

Twenty metrazol treated cases, 20 electric shock treated cases, 20 epileptics and 20 non-convulsive cases were selected. The criteria for selection were (1) that the patients be approximately of the same age groups, and (2) that all cases had had major convulsive seizures (except the control group).

A flat lateral plate was made of the dorsal spine in each of these cases. The following tables show the results and Fig. 1 shows typical compression fracture found in these cases.

Fig. 2 shows compression fractures occurring in electroshock and is typical of

[1] From Clinical Department of the Southwestern State Hospital, Marion, Virginia.

[2] Dr. W. Allen Barker, Roanoke, Virginia, Consulting Roentgenologist for Southwestern State Hospital.

TABLE I

Fractures Occurring in Metrazol Shock

Case	Sex	Age		No. of convulsions		Dorsal vertebra fractured		
M 1	Male	32		3		6		
M 2	Male	34		3		3, 4		
M 3	Male	42		5				
M 4	Male	21		13		3, 4, 7		
M 5	Male	25	27.3	11	7.8		60%	45%
M 6	Male	19		19				
M 7	Male	27		10		4, 5, 7		
M 8	Male	19		7		5		
M 9	Male	18		5		Q. 7		
M 10	Male	36		2		6, 7		
M 11	Female	51		8		6, 7		
M 12	Female	54		8		6, 8		
M 13	Female	34		8				
M 14	Female	24		7				
M 15	Female	45	37.3	8	8.4	6, 7, 8	30%	
M 16	Female	29		8				
M 17	Female	22		8				
M 18	Female	49		13		H. A.		
M 19	Female	31		8				
M 20	Female	34		8				

Case M 9 was questionable.
Case M 18 had a severe hypertrophic arthritis (as did some of the fracture cases).

TABLE II

Fractures Occurring in Electric Shock

Case	Sex	Age		No. of convulsions		Dorsal vertebra fractured		
El. 1	Male	37		1				
El. 2	Male	40		1				
El. 3	Male	27		1				
El. 4	Male	20		11		4.6		
El. 5	Male	40		3				
El. 6	Male	34	—32.7	10	—4	Q. 7	—30%	
El. 7	Male	25		3				
El. 8	Male	34		1		H. A.		
El. 9	Male	35		3		4		
El. 10	Male	35		6		4.6		
El. 11	Female	32		12				
El. 12	Female	31		4		H. A.		
El. 13	Female	17		7				
El. 14	Female	48		2		H. A.		
El. 15	Female	41	—32.5	5		H. A.	—00%	
El. 16	Female	41		1		H. A.		
El. 17	Female	29		4				
El. 18	Female	15		4				
El. 19	Female	38		5				
El. 20	Female	33		2				

Case El. 6 was a questionable fracture and is here computed as negative.
Case El. 8, 12, 14, 15, 16 showed remarkable hypertrophic arthritis (H. A. in the table).
No fractures were encountered among the women. Thirty per cent of the men had definite fractures. There is an over-all precentage of 15 per cent for the group.

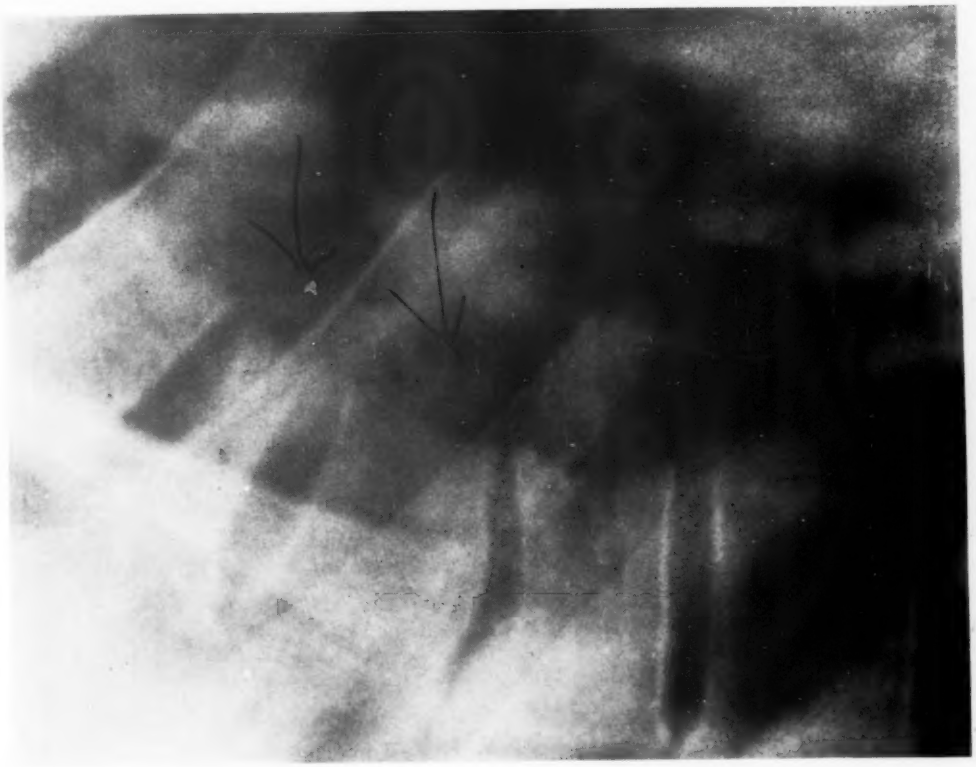


FIG. 2.

FIG. 1.

FIG. 4.

FIG. 3.

fractures encountered with this form of treatment.

Fig. 3 shows hypertrophic arthritis as seen throughout our series of cases. Other investigators(9) have interpreted these lesions as bone reactions at the site of fractures. In view of the high incidence of this type of lesion in our control series we feel that such an interpretation is unwarranted.

Fig. 4 shows typical fractures occurring in our epileptic series. It is to be noted that these fractures are indistinguishable from those occurring with metrazol and electroshock both as to type of fracture and location.

TABLE III

FRACTURES OCCURRING IN EPILEPSY

Case	Sex	Age		No. of convulsions		Dorsal vertebra fractured	
Ep. 1	Male	26		58			
Ep. 2	Male	44		22			
Ep. 3	Male	47		10		3, 4, 7	
Ep. 4	Male	30		58			
Ep. 5	Male	53		105	—55.9	H. A.	—40%
Ep. 6	Male	51	—42.2	80		9, 10, 11	
Ep. 7	Male	47		69		H. A.	
Ep. 8	Male	44		34		6, 7, 12	
Ep. 9	Male	40		21		7, 9	
Ep. 10	Male	40		43			
Ep. 11	Female	29		168		7 D	
Ep. 12	Female	53		69		5, 8	
Ep. 13	Female	53		39		H. A.	
Ep. 14	Female	35		44		3, 4, 5	
Ep. 15	Female	35	—37.6	139	—56.7	H. A.	—50%
Ep. 16	Female	24		25			
Ep. 17	Female	52		26			
Ep. 18	Female	24		21		6 D	
Ep. 19	Female	44		24		H. A.	
Ep. 20	Female	47		112		8 D	

TABLE IV

CONTROL SERIES

Case	Sex	Age		No. of convulsions	X-ray
C. 1	Female	38		0	H. A.
C. 2	Female	28		0	
C. 3	Female	35		0	
C. 4	Female	37		0	
C. 5	Female	40	—33	0	
C. 6	Female	19		0	
C. 7	Female	38		0	H. A.
C. 8	Female	36		0	
C. 9	Female	36		0	
C. 10	Female	23		0	
C. 11	Male	29		0	
C. 12	Male	34		0	
C. 13	Male	34		0	
C. 14	Male	28		0	
C. 15	Male	27		0	H. A.
C. 16	Male	28	—31.6	0	
C. 17	Male	38		0	H. A.
C. 18	Male	39		0	Q. 6
C. 19	Male	34		0	
C. 20	Male	25			

Table V shows the number of fractures according to location.

TABLE V

Dorsal vertebræ	Metrazol	Electric	Epilepsy
1	0	0	0
2	0	0	0
3	2	0	2
4	3	3	2
5	2	0	2
6	5	2	2
7	6	0	4
8	2	0	2
9	0	0	2
10	0	0	1
11	0	0	1
12	0	0	1

COMMENTS

The number of our cases acquiring vertebral fractures from metrazol shock is comparable to the number reported by others. Most of our metrazol cases were treated on a flexible mattress and springs with a minimum of effective spinal restraint.

All of our electric shock cases have been treated on a rigid table with a hard mattress. These patients have also been held firmly by six attendants, three on each side. One at-

tendant on each side holds the shoulder and crest of ileum, another the hip and knee, and the third the knee and ankle. In addition, the operator exerts some hyperextension of the neck. It is to be noted that no fractures from electric shock have occurred in the women patients. Whether or not this is due to a better application of restraint we are not prepared to say. However, when we compare the fractures resulting from metrazol shock in the two sexes we find that there are 60 per cent in the men and only 30 per cent in the women. This may be due to the stronger musculature of the men. This deduction does not seem to hold, however, when we compare the percentage of cases of epilepsy having fractures. Forty per cent of the males and 50 per cent of the females had such fractures. Our incidence of vertebral fractures in epileptics is comparable to that reported by Shatz and Kohnwalter(3) except that in their series they reported only one fracture occurring in the dorsal spine while all of our reported fractures have occurred in this region.

Our findings do not substantiate the deduction that vertebral fractures in epilepsy are due to the trauma of frequent falls during seizures. It is fairly well agreed that traumatic lesions in the dorsal spine are rare.

The high incidence of hypertrophic arthritis in all groups studied requires further study as to etiology.

REFERENCES

1. Wespi, Hans. Ein Fall von spontaner Wirbelfraktur in Cardiazolanfall. Schweiz. Arch. f. Neurol. v. Psychiat., **42**: 404-406, 1938.

2. Polatin, P., Friedman, M. M., Harris, M. M., and Horwitz, W. A. Vertebral fractures produced by metrazol convulsions. J. A. M. A., **112**: 1684, 1939.

3. Shatz, I., and Kohnwalter, B. E. Spine injuries following convulsions from metrazol and idiopathic epilepsy. J. Nerv. and Ment. Dis., **93**: 169, 1941.

4. Bennett, B. T., and Fitzpatrick, C. P. Fractures of the spine complicating metrazol therapy. J. A. M. A., **112**: 2240, 1939.

5. Kraus, G. R., and Langsam, C. L. Fractures of the vertebra following metrazol therapy. Radiology, **36**: 725-730, June 1941.

6. Easton, N. L., and Sommers, J. The significance of vertebræ fractures as a complication of metrazol therapy. Am. J. Psychiat., **98**: 538, 1942.

7. Hamsa, W. R., and Bennett, A. E. Traumatic complications of convulsive shock therapy. J. A. M. A., **112**: 2244, 1939.

8. Worthing, H. S., and Kalinowsky, L. B. The question of vertebral fractures in convulsive therapy and epilepsy. Am. J. Psychiat., **98**: 533, 1942.

9. Moore, M. T., Winkleman, N. W., and Cohen, Solis. Asymptomatic vertebral fractures in epilepsy. J. Nerv. and Ment. Dis., **94**: 309, 1941.

10. Pearson, M. M., and Ostram, H. W. Fractures of the spine after metrazol convulsive therapy and other convulsive states. Am. Jour. Roentgenology and Radium Therapy, **44**: 726, 1940.

11. Ziskind, C., and Ziskind, E. Sommerfield. Compression fractures of spine in epilepsy. Bull. Los Angeles Neur. Soc., **4**: 45, 1939.

12. Epstein, Joseph. Complications and unusual phenomena arising in the course of metrazol treatment of the psychoses—their classification and management. J. Nerv. and Ment. Dis., **94**: 562, 1941.

THE TREATMENT OF PSYCHOSES WITH LONG PROTRACTED INSULIN COMA [1]

JOSEPH WORTIS, M.D., MILTON TERRIS, M.D., AND IRVIN M. KORR, PH.D.

INTRODUCTION

The observation repeatedly made by various workers that long protracted insulin coma frequently induced dramatic psychiatric improvement has stimulated considerable effort to devise a safe method for the prolongation of coma. The success of Drury and Greeley(1) in maintaining constant blood sugar levels in insulinized dogs by means of continuous glucose infusions encouraged our effort to maintain a controlled hypoglycemia in human subjects. In developing this procedure we were guided by the following general considerations:

In the treatment of psychoses, insulin coma (or the period of unconsciousness) is generally not allowed to persist beyond an hour or an hour and a half. In cases inadvertently allowed to linger in coma beyond that period, an irreversible insulin coma frequently follows that can no longer be relieved by intravenous glucose. Patients who survive several hours or days of this relatively irreversible coma often show dramatic psychiatric improvement on awakening(2). Kraulis(3) attempted to utilize this phenomenon for therapeutic ends by prolonging insulin coma with periodic small glucose feedings sufficient to sustain the patient but not sufficient to rouse him. The difficulties in the clinical management of these sporadic feedings, however, and the frequent presence of gastric retention (which Kraulis did not suspect) made this mode of treatment too dangerous for clinical application.

It can be assumed that the cerebral injury which ensues in accidentally protracted coma is due to the diminution of brain metabolism (by withdrawal of substrate) below levels adequate for cell maintenance over long periods of time. In our cases (60 experiments on 15 subjects), we have succeeded in prolonging hypoglycemia as long as 24 hours and coma as long as 20 hours without mishap, by sustaining brain metabolism above this dangerous level, but still below levels which support consciousness and other associated cerebral functions. This has been achieved by administering infusions of 5 per cent glucose in physiological saline (Sterisol) intravenously at controlled rates. Inasmuch as large doses of insulin exert their hypoglycemic effect for many hours after administration, one need only maintain the blood glucose at a moderately high level (*e.g.*, 35 mg. per 100 ml.) to prolong coma for many hours. When the insulin effect begins to subside, a fresh intramuscular injection of insulin can be administered, We have found that a variation in infusion rate between 3 and 10 ml. per minute (0.15 to 0.5 g. of glucose per minute) is generally sufficient to maintain both the sugar level and the state of consciousness at a uniform level. The adjustment of the blood sugar level by regulation of the speed of flow has proven to be surprisingly simple and reliable. Rapid bedside sugar determinations together with clinical observations govern the adjustment of the rate of infusion. Arousal with the injection of 25 g. of glucose by vein has been prompt and complete. The patients are then allowed to eat and drink and are carefully watched for late shock.

In these early experiments we have established the practice of rousing the patients for a minute or two, 2 or 3 times during each treatment, in order to assure ourselves of the continued reversibility of the coma. This is done merely by accelerating the infusion for a short period of time. Upon slowing the infusion once more, the subjects quickly revert to the comatose state. Under the conditions of our experiments, the transition from complete unconsciousness to the state in which the patient can answer questions, and *vice versa,* can be regulated by

[1] Read at the ninety-eighth annual meeting of The American Psychiatric Association, Boston, Massachusetts, May 18-21, 1942.

From Bellevue Psychiatric Hospital and the Departments of Psychiatry and Physiology of the New York University Medical College. This work was aided by a grant from the Warner Institute for Therapeutic Research.

varying the blood sugar by as little as 2-5 mg. per cent. We have found that the critical level for coma is generally around 40 mg. per cent. Progressive lowering of the blood sugar below these concentrations causes deepening coma with the typical changes in level of neurological integration noted in ordinary coma. The method thus provides a unique opportunity for the systematic study of physiological and psychological functions at different levels of neurological integration.

Methods and Materials

The rapid bedside sugar method of Hawkins and Van Slyke which we first used(4) has been abandoned in favor of a less rapid but more accurate modification of the Folin-Wu method, employing a photo-electric colorimeter. Small differences are important and it is worth the effort to experiment with a sugar method that will give a correct value for the true glucose level. The clinical material on which this method has been used has consisted so far exclusively of young male schizophrenic subjects undergoing the usual course of insulin treatment. Protracted comas were used in these subjects from time to time in the course of the treatment by starting the infusion as described above after coma developed.

The outstretched arm is fixated on a padded splint in the pronated position. The splint should extend to both the wrist and elbow joints and the arm should be firmly but not too tightly bandaged to the splints. The distal end of the splint is then tied to the bed. A flexed splint is generally more comfortable than a straight one. Pain in the cramped and outstretched arm is the most frequent complaint of patients on awakening and is worth special attention. The needle is inserted firmly and deeply in a vein of the forearm, blood is drawn into a syringe, and the infusion adapter then substituted for the syringe. Needle, adapter and tubing are then fixed with strips of adhesive. Some padding under the glass adapter is sometimes necessary to keep the needle point in the lumen of the vein. The needle tip under the skin should be checked at intervals for infiltration. The juncture of the glass adapter and needle should be checked regularly for leaks. Blood specimens are most easily taken from the other arm and the other arm can be used for a rapid injection of 50 per cent glucose upon termination.

Clinical Management

Efforts to produce coma on the first day of treatment with large doses of insulin, with long waiting, are generally disappointing. Patients rarely lapse into coma on the first day. We have generally required several consecutive days of insulin treatment with mounting doses of insulin to induce coma in our cases. Upon the appearance of the first coma, the infusion may be started—perhaps half an hour after the onset of coma—and may be controlled from that point onward by reference to clinical signs and blood sugar findings. In general a rate of less than 60 drops a minute of the 5 per cent Sterisol is sufficient.

Temperature and pulse rate, particularly the former, are extremely valuable guides to the development of complications. Inadequate glucose (due perhaps to a clotted or infiltrating needle) may result in hyperglycemic or irreversible coma, the first indication of which may be a mounting temperature curve. The temperature curve is normally well below 98.6° F. during hypoglycemic coma, and shows a general correlation to the depth of coma. When irreversible coma supervenes, however, the temperature begins to mount and in advanced irreversible coma may reach very high fever. This rise is associated with hyperglycemia which reflects the inability of the tissue to utilize glucose. The pulse and respiration rate also rise. The treatment for irreversible coma requires blood transfusion, sodium chloride infusion (or sodium chloride by mouth) and adequate supplies of glucose by vein. Thanks to these measures we have never had a serious mishap from irreversible coma in all our past experience; but prevention is better than cure and careful charting of the temperature and pulse, frequent blood sugars, and close observation will prevent these dangers.

We must warn especially against the danger of clotted or infiltrating needles, slipping needles, poor fixation of the arm, too slow an infusion rate (25-30 drops per minute is the usual minimum) or careless charting

of the temperature and pulse. The patients should be closely watched and blood sugars checked frequently until the physician acquires assurance in the clinical management. At intervals of a couple of hours the patient should be momentarily roused by allowing a short spurt of glucose infusion. It is unwise to allow a fast flow to continue until the patient is fully aroused, because there is always a lag of a few minutes in the effect of glucose and too much glucose will keep the patient roused too long. A minute's spurt and a two minute wait, then another spurt, etc., is the best procedure for arousing the patient a short time. Upon termination the patients are allowed to eat and drink and are carefully watched for late shock, for which they may well have a heightened susceptibility. The present composition of our infusion fluid probably produces considerable tissue dehydration for patients invariably have an avid thirst upon arousal.

Indications

Because of the somewhat dramatic character of this treatment, its apparent simplicity and good theoretical basis, it may be tempting to use it in a wholesale manner as an extension of the ordinary insulin treatment or as a substitute for it. That indeed was our original hope and intention, but it cannot yet be said that we have arrived at this goal; we therefore recommend caution in its general application. The procedure has on the whole proven to be safe and reliable, and we saw no unusual reaction until we extended the hypoglycemia in one case to 24 hours. The course in this case too was uneventful and the patient roused fully and promptly, but a period of hyperglycemia and febrility unassociated with coma or with any other clinical signs supervened and was finally relieved by sodium chloride administration. It seems probable that the long infusion resulted either in an electrolyte unbalance or in some special injury to the adrenals, or both. We are now investigating the electrolyte changes in long protracted coma and hope that we may devise an infusion fluid that will provide the proper electrolyte balance for this purpose. Pending these developments we would advise a limitation of hypoglycemia to about 12 hours, which seems to have been consistently safe and simple in our hands. Treatments of this intensity may be administered two or more times weekly without undue difficulty for the patient.

Therapeutic Results

We have no adequate statistics of the therapeutic value of the treatment. Our first experiments were made only occasionally on patients undergoing regular insulin treatments and we cannot attribute the good results, when they occurred, to protracted coma alone. Wartime is likely to delay further experimentation, and we have not felt justified in abandoning the usual insulin treatment for the protracted coma treatment. There is no reason at all to expect, however, that the results will be worse than the ordinary treatment and there is much reason to expect they will be better. We have already had cases that responded very well to protracted coma after a long and unsuccessful course of ordinary insulin treatments. There are also indications that the procedure will shorten the course of insulin treatment.

Further modifications in the technique will no doubt become necessary. Since numerous cases of accidentally induced protracted coma have demonstrated its therapeutic value we hope that a single prolonged coma of the type described above may prove to be the equivalent of long periods of ordinary treatment. With a total of 15 cases thus far treated the results justify the hope that this modification of the so-called insulin shock treatment will shorten its duration, simplify its management, and still further extend its range of usefulness.

BIBLIOGRAPHY

1. Drury, D. R., and Greeley, P. O. The measurement of insulin action. Am. J. Physiol., **127**: 581, October 1939.

2. Wortis, J., and Lambert, R. H. Irreversible or hyperglycemic insulin coma. Am. J. Psychiat., **96**: 335, September 1939.

3. Kraulis, W. Protracted shock in the treatment of schizophrenia. Am. J. Psychiat., **94** (Suppl.): 324, May 1938.

4. Wortis, J., and Korr, I. M. A simple method for prolonging therapeutic insulin coma. Proc. Soc. Exp. Biol. Med., **49**: 128, 1942.

EVALUATION OF THE EFFECTS OF INTRAVENOUS INSULIN TECHNIQUE IN THE TREATMENT OF MENTAL DISEASES

A Follow-Up Study of a Group of Patients Treated with Intravenous Injection of Unmodified Insulin and Zinc-Insulin Crystals [1]

PHILLIP POLATIN, M.D., and HYMAN SPOTNITZ, M.D.

New York, N. Y.

Because of the disadvantages attendant upon the use of prolonged insulin coma in the treatment of patients with mental disease, several modifications of the technique of insulin shock therapy have been developed in recent years. We have been interested in discovering that beneficial effects could be obtained by treating patients with mild hypoglycemic shocks without coma(1, 2, 3, 4). In previous reports(5, 6) we have outlined our experiences with the intravenous insulin technique of producing mild hypoglycemic shock. The results have been sufficiently promising to increase interest in this subject and recently several other papers on the effects of intravenous insulin in the treatment of mental disease have appeared(7, 8, 9).

In view of the simplicity of the intravenous method and the rapidity with which results are obtained, we considered this approach valuable. But it remained to investigate the stability of improvement by this method and to evaluate the indications for its use. This report presents such an evaluation.

Technique of the Intravenous Method

The details of the procedure have been described in previous reports(5, 6, 9). For present purposes it is sufficient to state that those patients selected for this treatment and who had no unusual insulin sensitivity by previous testing received, in the morning before breakfast, an initial injection of not more than 12 units of insulin into a cubital vein. Patients were permitted to remain in bed for from two to three hours. The initial dose was increased by five unit increments as more marked effects were desired. Ordinarily the period of hypoglycemia was terminated with about 200 c.c. of a 25 per cent solution of glucose in water flavored with lemon. The patients were usually able to drink the solution without assistance. It was given to them after they had had hypoglycemic symptoms for from one-half to one hour. Five morning treatments were given each week. The largest amount of insulin given in a single injection was 115 units. A nurse was constantly in attendance and a physician was always available during the period of treatment.

Whenever possible the therapy was continued until a stable improvement had been obtained. Frequently this goal could not be secured because of patients' poor veins or on account of unavoidable limitations of hospital facilities.

For purposes of investigation, one group of patients was treated with unmodified insulin and another group was given a solution of zinc-insulin crystals. Whenever it was found that a patient became allergic to unmodified insulin, he was shifted to a solution of zinc-insulin crystals.

Effects of Insulin Injected Intravenously

With unmodified insulin, 23 patients were treated over a period ranging from two to thirteen weeks. Eleven patients improved. With a solution of zinc-insulin crystals, 10 patients were treated over a period ranging from six to twenty-one weeks. Three improved. The clinical diagnoses and significant data pertaining to these cases are listed in Table I. Several other patients were treated in private practice by one of us (H. S.) and the observations made on these patients are included in the opinions here

[1] Read at the ninety-eighth annual meeting of The American Psychiatric Association, Boston, Massachusetts, May 18-21, 1942.

From the Department of Psychiatry of the New York State Psychiatric Institute and Hospital.

expressed, although not included in the tabulated material.

The symptoms produced during the hypoglycemic state resulting from the intravenous injection of insulin were essentially similar to those seen after hypodermic injections. hypoglycemia followed, after a period of recovery, by another period of hypoglycemia—was seen repeatedly after the injection of insulin intravenously. The occurrence and the rapidity of the biphasic effect was less marked with the solution of zinc-insulin

TABLE I

RESULTS OF INTRAVENOUS METHOD OF INSULIN THERAPY

A. UNMODIFIED INSULIN

Patient	Age	Sex	Diagnosis	Duration of illness	Number of intravenous treatments	Degree of improvement	Remarks
E. R.	26	F	Schizophrenia (hebephrenic)	3 mo.	47	Recovery	No relapse
A. W.	35	F	Schizophrenia (hebephrenic)	8 yr.	59	Marked	No relapse
C. S.	32	F	Schizophrenia (hebephrenic)	3 mo.	69	Marked	Relapsed
A. R.	13	F	Schizophrenia (catatonic)	2 yr.	66	Slight	No relapse
J. Q.	35	F	Schizophrenia (catatonic)	2½ yr.	72	None	
M. P.	35	F	Schizophrenia (hebephrenic)	7 mo.	62	None	
T. M.	22	F	Schizophrenia	1 yr.	50	Slight	Remains improved with psychotherapy
E. G.	25	F	Schizophrenia (hebephrenic)	2 yr.	64	Slight	Relapsed
D. M.	18	F	Schizophrenia (hebephrenic)	2 yr.	10	None	
L. C.	42	F	Schizophrenia (paranoid)	5 yr.	58	Marked	No relapse
S. T.	18	M	Schizophrenia (simple)	2 yr.	29	Marked	Relapsed
S. M.	22	M	Schizophrenia (simple)	Over 3 yr.	40	None	
A. H.	30	M	Schizophrenia (simple)	5 yr.	70	None	
L. C.	19	M	Schizophrenia (hebephrenic)	3 mo.	35	None	
W. B.	24	M	Schizophrenia (mixed)	Over 2 yr.	27	None	
D. L.	39	F	Depressive psychosis	4 mo.	44	Marked	Remains improved with psychotherapy
E. L.	39	F	Depressive psychosis	2 yr.	76	None	
E. M.	37	F	Depressive psychosis	7 mo.	78	Slight	No relapse
A. M.	29	F	Anxiety hysteria	2 yr.	53	None	
E. B.	30	M	Anxiety hysteria	Over 8 yr.	55	Slight	Slight relapse
L. S.	20	M	Obsessive compulsive neurosis	3 yr.	32	None	
L. W.	20	F	Obsessive compulsive neurosis	5 yr.	46	None	
P. C.	41	M	Paranoid psychosis	5 mo.	38	None	

B. SOLUTION OF ZINC-INSULIN CRYSTALS

A. P.	34	F	Schizophrenia (mixed)	15 da.	33	Marked	No relapse
P. V.	29	F	Schizophrenia (mixed)	6 mo.	50	Marked	No relapse
L. N.	23	M	Schizophrenia (hebephrenic)	10 mo.	29	None	
M. B.	30	M	Schizophrenia (paranoid)	2 yr.	65	None	
S. H.	20	F	Schizophrenia (hebephrenic)	3 yr.	105	None	
L. K.	22	F	Schizophrenia (hebephrenic)	2 yr.	50	Slight	No relapse
M. O.	32	F	Schizophrenia (paranoid)	4 mo.	76	None	
M. M.	12	M	Behavior disorder	2 mo.	66	None	
C. D.	20	M	Schizophrenia (catatonic)	3 mo.	44	None	
L. B.	20	M	Schizophrenia (catatonic)	4 mo.	42	None	

Details are included in our previous reports(5, 6). With the solution of zinc-insulin crystals, the hypoglycemic symptoms developed less rapidly and a tendency to untoward symptoms, such as convulsions and irregular cardiac and respiratory functions, was more noticeable than with the unmodified insulin.

A biphasic effect—that is, a period of

crystals than with the unmodified insulin. Sufficient food given immediately after the glucose ingestion prevents the occurrence of these undesirable effects.

The time necessary for manifest improvement of patients with mental disorders was shorter with the intravenous method than with the usual insulin coma technique or with the ambulatory insulin shock technique.

Some patients lost all their overt psychotic symptoms within a week of treatment.

It was found that it was highly desirable to keep the insulin dosage at a minimum. It was rarely necessary to give more than forty units intravenously in order to obtain observable beneficial changes, even though these effects were only of a transient nature. With larger doses untoward symptoms were obtained and a tendency toward convulsive seizures and protracted coma was noted.

The improvement obtained with the use of insulin intravenously was generally found to be cumulative, so that the longer the period of treatment, the more stable and more lasting were the favorable results. In Table II we have listed the relapse rate. Within two years after cessation of treatment, 4 patients of 11 who had improved with unmodified insulin, had relapsed.

TABLE II

CLINICAL RESULTS OBTAINED WITH INTRAVENOUS METHOD OF INSULIN THERAPY

	Total No. of patients treated	Total No. of patients improved	No. of patients improved then relapsed
Unmodified insulin	23	11 (48%)	4 (36%)
Solution of zinc-insulin crystals	10	3 (30%)	0

DISCUSSION

The intravenous method of insulin treatment has the advantage of producing comparatively rapid improvement in patients with mental disorders and requires less time daily for the period of therapy. Generally two or three hours constitute a sufficiently long treatment period. Some of the disadvantages are that the injections must be made intravenously by a physician and the treatment is limited by the condition of the patient's veins. The tendency toward convulsions is more marked than with the ambulatory insulin shock technique. The rate of improvement is also less, but this may be due partly to the fact that patients receiving insulin intravenously were treated over a shorter period of time.

No observable injuries occurred in the course of intravenous insulin treatment. Although a few convulsive seizures did appear, in general their occurrence could be prevented by small doses of luminal and by keeping the insulin dosage at a minimum. It is also felt that the hypoglycemic state thus produced should not be permitted to extend beyond one-half to one hour, otherwise a protracted coma may ensue with its potential threat to the patient.

There is a definite tendency for patients to relapse, both during the course of intravenous insulin treatment and after the cessation of this therapy. It was clearly observed that the tendency to relapse was less marked by the addition of more or less intensive psychotherapy during hospitalization and after discharge. If the external environment to which the patient returned after hospitalization was favorable, the tendency to relapse was less marked.

It is our impression that the rapidity with which the hypoglycemic shock can be produced is of considerable importance for the best therapeutic effects and we believe that this factor, *i.e.*, the rapidly developing hypoglycemic shock following intravenous insulin injection, is responsible for the comparatively rapid improvement observed. In general, patients whose psychosis was of long duration developed hypoglycemic shock less rapidly and for this reason a longer period of treatment was necessary before improvement occurred.

Patients whose psychosis developed acutely and was of very short duration appeared to be most benefited by the intravenous insulin therapy. We believe that the intravenous technique is clearly indicated for such acute psychoses. The clinical improvement observed is comparatively rapid and the manifest symptoms may disappear after a week or two of treatment. With these patients the insulin dosage should be increased rapidly so that they are receiving definite hypoglycemic effects at each treatment. Generally, about thirty units of insulin intravenously are sufficient for desirable results in these cases.

Several investigators have been interested in producing insulin coma by the intravenous

method(10). We have not felt it desirable to produce coma because of the evidence available that brain damage may result from the exposure of patient to insulin coma. Our impression is that the mild hypoglycemic shock produces satisfactory results. Reznikoff and Scott(9) recently came to similar conclusions.

Summary and Conclusions

1. A group of 33 patients with mental diseases of whom 24 had schizophrenia, was treated with insulin intravenously. Twenty-three patients were treated with the intravenous injection of unmodified insulin and 10 patients with the intravenous injection of a solution of zinc-insulin crystals. Definite improvement was observed in 14 patients so treated. Of these, 4 patients relapsed within a period of two years following cessation of therapy.

2. A solution of zinc-insulin crystals intravenously is recommended for use when patients are allergic to unmodified insulin; otherwise more favorable effects were obtained with the unmodified insulin.

3. The intravenous method of insulin treatment has the advantage of producing comparatively rapid improvement in patients with mental disorders and requires less time daily for the period of therapy.

4. A tendency to relapse was less marked when the patients were treated with intensive psychotherapy or when they were discharged to a favorable external environment.

5. It is believed that intravenous insulin shock technique is the method of choice in the treatment of patients whose psychoses have developed acutely and are of short duration.

Bibliography

1. Polatin, P., Spotnitz, H., and Wiesel, B. Ambulatory insulin treatment of mental disorders, N. Y. State J. Med., **40**: 843-848, June 1, 1940.

2. Tomlinson, P. J., and Ozarin, L. D. Ambulatory insulin therapy: A report of fifty-two cases. Psychiat. Quart., **16**: 167-173, Jan. 1942.

3. Polatin, P., and Spotnitz, H. Continuous ambulatory insulin shock technique in treatment of schizophrenia: Report of two cases. Arch. Neur. and Psychiat., **47**: 53-56, Jan. 1942.

4. Polatin, P., and Spotnitz, H. Ambulatory insulin shock technique in the treatment of schizophrenia: An evaluation of therapeutic effects. Read before the Section of Neurology and Psychiatry, Academy of Medicine, New York City, April 14, 1942.

5. Polatin, P., Spotnitz, H., and Wiesel, B. Effects of intravenous injection of insulin in treatment of mental disease. Arch. Neurol. and Psychiat., **43**: 925-931, May 1940.

6. Polatin, P., Spotnitz, H., and Raffaele, A. J. Intravenous injection of solution of zinc-insulin crystals: Its effect in treatment of mental diseases. J. Nerv. and Ment. Dis., **95**: 40-45, Jan. 1942.

7. MacGregor, J. S., and Sandison, R. A. Insulin treatment of schizophrenia in wartime. Brit. Med. J., **2**: 310-312, Sept. 7, 1940.

8. Jones, M. Intravenous insulin in the treatment of schizophrenia. Lancet, **239**: 36, Sept. 21, 1940.

9. Reznikoff, L., and Scott, J. J. Experience with intravenous use of solution of crystalline zinc-insulin in the hypoglycemic treatment of schizophrenia. Psychiat. Quart., **16**: 399-407, April 1942.

10. Mahoney, V. P., and Herskovitz, H. H. Hypoglycemic shock therapy produced by insulin administered intravenously. J. Nerv. and Ment. Dis., **95**: 265-269, March 1942.

A PREVENTIVE MENTAL HYGIENE PROGRAM FOR SCHOOLS[1]

M. A. TARUMIANZ, M. D.

Superintendent, Delaware State Hospital, Farnhurst, Del.

AND

H. EDMUND BULLIS

Executive Director, Delaware State Society for Mental Hygiene, Wilmington, Del.

DR. TARUMIANZ:

As Superintendent of the State Hospital and Director of the Traveling Mental Hygiene Clinics in Delaware, I have each year become more convinced that we psychiatrists must bring educators much closer into cooperation with us if we are to curtail to any appreciable extent the number of patients referred to our hospitals and clinics. In Delaware our traveling clinics work very closely with all the schools in the state as the great bulk of our clinic load is referred by schools and juvenile courts. Our clinics also handle a number of reading and speech disability problems from the schools. This child guidance work, important as it is, can not really be called preventive work for in almost every case referred to us the child has already experienced a decided emotional disturbance.

About two years ago I invited H. Edmund Bullis to come to Delaware to become Executive Director of our Delaware State Society for Mental Hygiene and to work out a program in the schools whereby children could be given instruction in mental hygiene principles. Delaware children were already being given instruction regarding physical health, safety, dental hygiene—why not mental hygiene?

I purposely selected a layman rather than a psychiatrist, feeling that in the long run prevention in our field will fall on the shoulders of laymen while we psychiatrists remain busy with our therapeutic, clinical, research and teaching work. For twelve years as Executive Officer of The National Committee for Mental Hygiene Colonel Bullis has been in a position to absorb as a layman the essential principles of mental hygiene and has developed a fine faculty for bringing to other laymen the benefit of his experience.

Colonel Bullis accepted the challenge to come to Delaware. Generous citizens at my request have financed the modest expenses of the experimental effort. Colonel Bullis frankly stated to educational leaders that he was not a psychiatrist, psychologist or educator. He admitted his work would be experimental and that at least five years would be required to produce any worth while results. He outlined the following policies for the demonstration:

1. There would be no added expenses to school budgets, as classes would be carried on during regular class periods by regular class teachers.
2. No psychiatrists, psychologists or specially trained personnel from outside the schools would be used.
3. Classes would be for normal children rather than for problem or slow children.
4. Weekly classes would be known as "Human Relations Classes." The label "Mental Hygiene" would not be mentioned.

Ten 7th and 8th grade classes were selected representing a cross-section of the Delaware school population. Colonel Bullis selected as his assistant demonstration teacher Miss Emily O'Malley of the Port Washington Junior High School, New York, a very charming, understanding, successful teacher of English.

What will come of this experimental work with the normal children of the 7th and 8th grades in my state remains to be seen. Certain constructive results, however, are already apparent. We have found not only that the problems of life and living can be presented in an interesting and stimulating fashion to the normal children of school age—that, by itself, would be quite encouraging—but more than that, the children are more than eager to learn a great deal about the subject, that mental hygiene, under the name human re-

[1] Read at the ninety-eighth annual meeting of The American Psychiatric Association, Boston, Massachusetts, May 18-21, 1942.

lations, can indeed be made the most popular subject of the curriculum.

By conducting this presentation as an interview in which I shall ask Colonel Bullis a series of questions, I hope we may be able to give a picture of our Delaware experience in human relations classes.

* * * *

DR. TARUMIANZ: WHAT DO YOU CONSIDER THE PURPOSE OF HUMAN RELATIONS CLASSES?

COL. BULLIS: (1) To interest teachers and school administrators in the mental hygiene aspects of education, by their actually gaining understanding of mental hygiene principles while working with children rather than by their taking theoretical courses. (2) To help children become more understanding regarding their own emotional strengths and weaknesses and to better appreciate the emotional problems of others. (3) To locate in each class the very recessive or shy child, and to encourage the teacher to devise ways and means whereby such shy children are encouraged to participate in group activities. (4) To train teachers to utilize discussion techniques in their teaching whenever possible.

HOW DO YOU LOCATE THE SHY RECESSIVE CHILD?

The following "social acceptability test," a modification of a test devised by Professor William Line and Dr. Mary L. Northway of the National Committee for Mental Hygiene of Canada, is given to 5th, 6th, 7th, and 8th grade children about the third week of the school year and again during the last week. The test of the lower grades, naturally, is slightly different.

In scoring the results, only the first three children mentioned in any answer are considered. A score of 5 points for 1st choice, 3 points for 2nd choice, and 2 points for 3rd choice is given. The various scores each child receives are totaled.

Before giving the test, teachers are asked to write down the names of the five children in the class whom they feel will get the lowest scores and the five most likely to receive the highest scores. Teachers are also instructed to give a short outline of the characteristics of each of the five children receiving lowest scores.

WHAT DO THESE TESTS SHOW IN AN AVERAGE CLASS?

The five class leaders generally receive between 100 and 250 points, with one pupil well out in front. The five lowest receive practically no points (0—2—5—8—11). For one reason or another, these five lowest are socially unacceptable in their class. They are facing a "blackout" insofar as being given consideration by their classmates. Comparable results have been obtained from these social acceptability tests in all parts of the United States, in all grades, and among all types of students.

WHAT DIFFERENT TYPES OF CHILDREN DO YOU FIND IN THIS SOCIALLY UNACCEPTED GROUP?

In a class of 35, there is generally one "show-off," one very "slow" child, one handicapped (physically crippled, very nervous, different racial stock), and two very shy children. Racial prejudice varies greatly, largely dependent, I believe, on the attitude of parents. In one 6th grade class in New York State in which there were six negro

1. Name ..... Nickname .....
2. Suppose you and three of your homeroom classmates have to be transferred to another school, which three classmates would you like best to go with you?.....
.....
3. What outside-of-school game, hobby, or other activity are you most interested in?.....
Which three classmates would you like best to take part with you in this activity?.....
.....
4. Suppose you have missed a week at school, and the teacher informs you that you may get anybody in your classroom to tell you about the work you have missed and also to help you catch up in your work, whom would you choose?.....
5. Suppose you and three of your classmates are to put out a classroom newspaper, whom would you choose to work on it with you?.....
.....
6. Whom in this class do you consider your closest, most trusted friend?.....
.....

children in a class of 34, a negro girl rated highest while a negro boy rated lowest.

How Do You Give Tests to First Grade Children Who Do Not Read or Write?

The teacher calls the test a game, and tests each child individually allowing him to pick the ones he wishes to sing with, take home to a party, etc. We find even in first grade classes the same socially unacceptability pattern present.

Do You Find the Shy Children Are Actually Unpopular?

No. They are so quiet and so seldom participate in group activities or games that the other children forget they are in the class and generally do not choose them. The children often do not know the nicknames of the shy children.

Are Teachers Surprized at the Results of Tests?

Yes. They generally guess four out of five of the class leaders and three out of five of those receiving the lowest scores. They generally do not realize that some of the bright, attractive children who give them no disciplinary problems are often so shy as not to be accepted by their classmates.

Why Do You Place Particular Emphasis on the Recessive Child Rather Than on the Other Types Shown to Be Unacceptable by Your Tests?

As many of you know, Dr. C. M. Hincks and I interested Commander Melvin M. Johnson, Sovereign Grand Commander of the Supreme Council 33°, Scottish Rite Masons, Northern Jurisdiction, in founding and financing the Committee on Research in Dementia Præcox. As secretary of the Committee, I have been much interested in the various types of research subsidized. From what I could learn from these research projects, dementia præcox patients as children were generally shy, recessive, lacked a sense of humor, were poor losers, or had little social contact with children of their own ages.

The Tuberculosis Movement began to make real progress in prevention when it focused attention on the undernourished child. It seems logical that if we are to make real progress in curtailing the great problem of dementia præcox, we should focus our attention on one group, the very recessive children, and try to work out practical means of bringing a higher percentage of these shy children into wholesome group activities, of finding ways of giving them real recognition and feelings of satisfaction and success. Obviously, the place to attempt this is in school.

Under a grant from the Committee on Research in Dementia Præcox, Dr. J. D. M. Griffin and Professor William Line both of the National Committee for Mental Hygiene of Canada have studied shy children in Toronto schools. With their permission, I started where they left off to try to apply on a rather large scale their findings in classroom settings.

After Locating the Shy Children in Each Class, What Steps Do You Then Take?

First, I endeavor to impress on the teacher the seriousness of the problem presented by the very shy child, and encourage her to use her ingenuity in bringing the child into group activities. The teacher is asked to discover what the shy child does better than average and to build on such strengths—never to spend time building up the child's weakest points. I encourage teachers to devise ways to bring these strengths to the attention of the class so that the shy child will receive the encouragement of success. I find children are accepted by others not only for their personality traits but also for their skills. It is generally easier to develop skills first, and personality traits afterwards. The teacher is asked to give the shy child class responsibilities and praise him before the class for his success.

Do You Obtain Any Information from the Social Acceptability Test Which Is of Value to the Teacher?

The tests show who, if any members of the class, voted for the shy child, and also the members of the class for whom the shy child voted. This frequently suggests changes in seating arrangements and gives suggestions for special class projects for the shy child with the classmates he admires.

What Other Steps Do You Take Towards Socializing Children?

After a few weeks' experience obtained from the human relations lessons, a class leader who is looked up to by the shy child

is told confidentially by the teacher as to her problem in bringing the shy child into group participation. The class leader is frankly told by the teacher that the shy child is headed for an unhappy life if he does not learn to be part of a group. The challenge of helping bring the shy child into group activities is given the class leader who is pledged to secrecy. This new partnership, when it is tactfully arranged, does more to bring the shy child out of his shell than anything else I have tried.

DESCRIBE AS BRIEFLY AS POSSIBLE A TYPICAL HUMAN RELATIONS LESSON.

The theory on which these classes are operated is that little can be learned about emotional problems except through personal experience—that didactic teaching or lecturing falls short in providing the kind of insights that come out of actual life encounters with problems, and while it is impossible to furnish the children in the classes with the real life situations that they are to discuss and learn to understand, the aim is to create actual experiences as nearly as humanly possible. The teacher generally tells a short story, reads an excerpt from literature, or gives a personal anecdote as a stimulus for discussion. The children are encouraged to discuss freely the problems presented in these stimuli, to give an appraisal of the solution offered, to speculate on the motivations lying back of the behavior, and to indicate from their own personal experience situations parallel to those presented in the stories, dramas, etc. In this retelling of emotional experiences, often bringing out into the open problems they have never discussed before, a better understanding of their actions results.

Spontaneous discussion by pupils, of course, has distinct advantages over didactic teaching or lecturing. The children gain insights by projecting themselves into the stories or dramas, by listening to the opinions of others, by consciously or unconsciously examining their own lives and motivations, and by profiting from the direction given by the teacher. The act of talking to and with the group is in itself the greatest stimulus of interest. It also tends to insure remembering what transpires.

After the stimulus is given, there are two rules of procedure: each child raises his hand and waits to be called upon by the teacher before speaking, and each child stands while making his contribution to the discussion. In early classes, there is a tendency for a few of the more vociferous pupils to try to monopolize the discussion. This, however, is easily controlled by the demonstration teacher.

THE CRITICISM HAS BEEN OFFERED THAT WHILE THE DEMONSTRATION TEACHERS YOU HAVE SELECTED WERE SUCCESSFUL WITH HUMAN RELATIONS CLASSES, BADLY ADJUSTED TEACHERS MIGHT DO MORE HARM THAN GOOD WHEN TRYING TO CONDUCT HUMAN RELATIONS CLASSES. DO YOU HONESTLY BELIEVE THE TECHNIQUES USED ARE TRANSFERABLE?

Of the 142 teachers I have had in my classes to date, I feel that all but five or six can conduct a successful human relations class. Naturally, some teachers are much more understanding and successful in guiding discussion than others. In discussion classes, however, the teachers have much less to say than in regular classes. Every sizeable school system has its quota of maladjusted teachers. In my opinion, they do less harm when attempting to use discussion methods than when using their regular methods. Children learn in discussion classes more from listening to the opinions of other members of the class than from the teacher.

WHAT TYPES OF STIMULI HAVE YOU FOUND SUCCESSFUL?

We started with sound-movie excerpts developed by Dr. Alice V. Keliher and her associates. These were excellent, but because of expense and lack of equipment, we have not used this type of stimulus during the past year. We have also used radio programs. Generally, however, they do not come at the right time. We have successfully used phonograph records of radio dramas. Often, however, we found these dramas a bit too long. Current event articles from newspapers often make excellent stimuli. At the time of the Pearl Harbor and Singapore incidents, the classes eagerly discussed emotional problems of war time. One of the best types of stimuli is a short playlet in which the class selects six or eight of their own members to read the play which has not been rehearsed. Excerpts

from literature such as parts of Dickens' "Christmas Carol," a poem such as "If" by Kipling, case studies of juvenile delinquency, panel discussions, debates, and short stories of personal experiences were all used effectively.

After several classes of human relations lessons, an alert class can start discussion on a problem without any stimulus at all. Some of the stories used as a stimulus have been suggested by children. An 8th grade boy in one of my classes wrote a story on the life of Lou Gehrig, and he conducted a most successful human relations class.

DO YOU ENCOURAGE VISITORS?

Yes. After three lessons, we allow visitors to sit in the back of the room. Generally speaking, they have not inhibited the children except in two classes where certain domineering parents were present and in another class when a superintendent of schools, of whom the children were afraid, visited the room.

We have conducted very successful demonstration human relations lessons before educational meetings and teachers' conventions with the aid of sound equipment, and have used for such purposes pupils with whom we had never before worked. Such a class requires considerable skill on the part of the teacher. Also, the pupils do not respond so well regarding their personal problems before large audiences. The only purpose of such classes is to demonstrate the discussion techniques used.

WHAT ARE SOME OF THE TOPICS DISCUSSED IN YOUR HUMAN RELATIONS CLASSES?

A single stimulus often leads to four or five different types of discussion. Among hundreds of subjects discussed the following are a few:

The Importance of Friends
Personality Traits of a "Regular Fellow"
Emotional Problems of Children in War Time
How Various Types of Punishments Affect Us
Sharing Our Emotional Problems With Others
The Results of Continued Failure on Personality Development
Frustrations and Conflicts
Personality Qualifications for Various Types of Vocations
Problems of a New Pupil in School
The Advantages and Disadvantages of Being Timid and Shy
Relations with Younger Brothers and Sisters
The Necessity for Self-Discipline—Learning to Lose Gracefully
Problems of Having Older Relatives or Outsiders Living in a Family
Public Enemies of Human Relations—Intolerance, Prejudice, Hostility and Suspicion
Setting Goals in Line With Capacity and Opportunity
Emotional Problems That May Lead to Delinquency

HOW DO PUPILS ENJOY THE HUMAN RELATIONS LESSONS?

A large proportion of the pupils stated that they enjoyed these classes more than any of their other classes. Why shouldn't they? These classes give them the opportunity to discuss freely things in which they have the greatest interest—problems affecting their daily lives.

Some children have shown more poise and ability to speak on their feet in other classes as a result of their experiences in the human relations classes. Certain shy children have experienced feelings of success which they did not know before and seem to be more at ease in their regular classroom situations. Because of their wider knowledge of practical life problems, some of the boys with juvenile court records made excellent contributions to the discussions, and achieved for the first time classroom success.

WHAT HAS BEEN YOUR EXPERIENCE WITH "SLOW" CLASSES?

Our "slow—75 I. Q. average" was the most difficult class in which to bring out worthwhile discussion. However, the principal of this school and the teacher of the class felt that this work should be continued, especially for this type of student. They were surprized at such discussion as did take place and stated that the human relations class held the attention of these "slow" pupils better than any of their regular classes. A boy from this particular class wrote on his paper, "If we had more of these classes, there would be less failures. You can read from a book, and about one hour later you have forgotten it; you don't forget this class."

I HAVE HEARD SOME CRITICISM OF YOUR DISCUSSING COMIC BOOKS IN CLASSES. WHY DO YOU BRING THIS CONTROVERSIAL ISSUE INTO THE CLASSES?

I have found that a higher percentage of the boys and girls of the 7th and 8th grades are interested in comic books than even in the radio or movies. I do not believe that

adults realize the important place the comic books play in the lives of our children. I have found that practically all of the very shy children are interested in the comics, especially "Superman," and other comics with heroes of supernatural power. In several instances, the first time we were able to get shy children to discuss freely anything was when some other child criticized "Superman."

I have encouraged teachers of slow classes to use the comic books in their regular English classes. I find that slow children are so interested in the comics that they can be taught to read much more easily using the comics than with the regular school readers.

I Have Noticed Pupils Keeping Notes in Your Classes. What Is the Purpose of This?

At the beginning of the period a sheet of paper is given each pupil on which to summarize the lesson and put down what he feels was important, or he may write anything he chooses. This paper is collected at the end of the period. Frequently, rather interesting comments, especially from the shy children appear on these lesson sheets.

Where Outside of Delaware Have You Tried Out These Human Relations Lessons?

I have just completed an in-service training course under the New York City Board of Education in which Miss O'Malley and I trained fourteen teachers assigned from eleven junior high schools in New York City. We had a volunteer 8th grade demonstration class from Public School No. 66 Brooklyn. This is the section where the "Murder Inc." gang was organized. We had an excellent attendance at these classes in spite of the time they came—4:30 p. m.—which was one hour after school closed. The boys in this class were most alert and had most interesting opinions.

After a fifty-minute meeting session with this class, they were dismissed. Every teacher in the course was given a lesson outline which included: the stimulus material used, suggested questions, points to be brought out, etc. These teachers during the following week tried out these lessons in their own schools and reported at the next session of the class on their successes and failures.

In addition, I had a similar class in Hofstra College, Hempstead, New York, in which we trained thirty-four teachers from twenty-seven schools on Long Island.

In Delaware I had two similar classes under the University of Delaware and have trained about eighty teachers from all parts of that state.

How Was the Work in New York Financed?

The Committee on Research in Dementia Præcox made an appropriation of $2500, which, with the honoraria paid by Hofstra College, financed the experimental work in Nassau County and in New York City.

Are the Human Relations Lessons Being Tried Out in Other Places?

Last October the entire issue of *Understanding the Child* was devoted to the work of the human relations classes. In that issue the teachers throughout the country were invited to try out the social acceptability test, and in exchange for their report were given outlines of the human relations lessons. As a result, approximately 120 schools throughout the country have used or experimented with these classes. Five schools of Saskatchewan are using the lessons regularly.

Visitors from thirteen states have witnessed our demonstration classes in New York in the past four months; while sixteen representatives of the Bureau of Child Guidance of New York City have also visited our classes.

Do You Feel You Are Affecting Teaching Techniques?

Yes. Teachers of English seem to be able to use our techniques to best advantage. One high school teacher of English in Delaware last term has used our methods in teaching "Macbeth" to her senior class, spending four class sessions in discussing the personalities, emotions, motivations, etc., of the characters of the play. She stated that this class learned more about Macbeth than any other class she ever taught.

What Sort of Stories Do You Use with Primary Grades?

Teachers have used Cinderella, Little Red Hen, Dumbo, and many other stories in the 1st, 2d and 3d grades as the stimuli for discussion. For example, one of the stories used in the 1st grade of a rural school in

Delaware was about a Mother Duck who had seven little ducks and a little turkey for her children. Little Turkey became a problem child. He did not like the water. He grew much larger than the other children. They thought he was a "show-off" and a bully. He liked to frighten the little ducks, took delight in hearing the pigs squeal. After a while, all the ducks became afraid of their big brother. Big Turkey became very lonely as no one wanted to talk with him. He became very cross. Finally, he went to Mother Duck and asked her why he was so unpopular. They talked the matter over; and as a result, he changed his ways and made the ducks and pigs like him because he protected them from the dogs and from the children who chased them. Big Turkey became "Big Brother" to the ducks.

It is very easy even in the 1st grade classes to bring the discussion around to those in the class who have some of the personality traits of Big Turkey and to suggest practical ways of helping make such children better liked.

CAN YOU SHOW ANY MEASURABLE PROGRESS AS A RESULT OF YOUR HUMAN RELATIONS CLASSES?

No. Of course, I have been greatly interested in the decided change in the point of view of some of the teachers as the results of their conducting discussion lessons. In many instances we have found that some of the very shy children have received more votes when the second social acceptability test was given. They never become the ranking leaders and we do not try to make extraverts of them. We find that in almost every class one or two boys or girls develop into the clearest thinking students and contribute most to the discussions. Frequently, these boys and girls had not been specially noticed before by their teachers or had not been considered as leaders by their classmates as they had not been prominent in scholastic attainment, athletics or social activities.

A standardized scale for evaluating school behavior of children was given to ten of our classes and to ten comparable classes in schools where they had never experienced human relations lessons. In comparing the results between the control classes and the discussion classes, it was evident that the pupils of the humans relations classes showed better scores in *Relations with Other Pupils* and *Relations with Others in General,* two important categories.

DR. TARUMIANZ:

It would seem to me that this new technique being developed in our educational system is much needed. The trite saying, "that the hope of our future lies in the youth of the day" is very true. We, of the older generation, have made tragic mistakes, which have led to intolerance and prejudice. It is only through the education of the school child that we can build a generation, which will be unusually stable. This is truly preventive psychiatric work and should continue and become universal in its scope. We must admit that from an emotional viewpoint the human race has shown little progress. Psychiatry has been primarily interested in the individual who has already shown signs of maladjustment, attempting to prevent him from becoming actually psychotic or attempting to provide an individual adjustment.

The ideal situation would be that of individual approach combined with group training, but this is obviously an impossible task. Therefore, we are seeking to obtain emotional adjustment of the nation as a whole by teaching all children in the school system the laws of mental and social health. This must be done while the personality is still intact, that is, during the early years of life. Nowhere, except in the school system, can we reach as many children and teach group adjustment so successfully. True, the procedure is still in the experimental stage and it is impossible to make any definite statements as to the results obtainable. However, we cannot help but feel that a step has been taken in the right direction. The child has not developed prejudices, intolerance or bigotry. If these classes will prevent such unfavorable traits from developing, they will have performed a service of supreme value to the future of mankind.

We are proceeding gradually. We might say that too much emphasis is being placed on the timid child. Yet, it would seem that

this emphasis is necessary since the others, due to inherent trends, will profit without special attention.

Whether psychoses will be prevented by this method, it is impossible to tell, but it does seem that a happier and more useful life will be guaranteed for the group.

The ultimate results will not be seen in this generation, for we must still deal with the prejudices of the parents, but there should be an improvement which becomes more marked as each additional group of children is trained in the science or art (whichever you please to call it) of human relationship.

Unfortunately since this paper was read Colonel Bullis was sent to Great Britain into active service. For this reason the work has been interrupted to a great extent. The Mental Hygiene Society of Delaware is endeavoring to find someone who will carry on the work on a temporary basis until Colonel Bullis is relieved of his war duties.

INVESTIGATION OF THE EFFECT OF INHALATION OF 9 PER CENT OXYGEN FOR 20 MINUTES IN NON-PSYCHOTIC AND SCHIZOPHRENIC MALE SUBJECTS [1]

By WILLIAM L. HOLT, JR., M. D., Worcester, Mass.

Introduction

In the literature on schizophrenia, occasional references are found to neurologic abnormality, notably Bumke's(1) observations on pupillary changes. There is no general agreement, however, that any abnormality in structure or gross neuro-muscular function of the nervous system characterizes the schizophrenic patient. Stress often makes clinically manifest abnormalities in function that would otherwise escape detection. In the examination of combat pilots the breathing of atmospheres low in oxygen has been found to reveal weaknesses in the neurologic sphere. It was the purpose of the writer to discover whether the neurophysiologic response of the nervous system of the schizophrenic patient appears to differ in some respects from that of non-psychotic subjects when both are placed under the stress of moderate anoxemia. Nine per cent oxygen in 91 per cent nitrogen administered by face mask was chosen as it was known to produce changes in nonpsychotics within a period of time convenient for experimental study.

Previous work on anoxemia in non-psychotic subjects had indicated that experimental subjects should be free of cardio-respiratory and metabolic diseases, notably arteriosclerosis, anemia, diabetes, myxedema and heart disease. The effect of anoxemia on the nervous system of the healthy normal subject has been described by Strughold(2), Jokl(3), Wilmer and Berens(4), Thompson and Corwin(5), Wespi(6), McFarland(7) and others. Davis, Davis and Thompson(8) described the electroencephalographic changes when the normal subjects breathed atmospheres containing 7.8 per cent to 11.4 per cent oxygen. Three of the 11 subjects lost consciousness and two of these showed large delta waves.

P. Davis in a personal communication reported that in a small number of schizophrenic patients on whom electroencephalograms were done during low oxygen inhalation experiments, slow waves were not encountered and none lost consciousness, a greater resistance to anoxemia apparently being present. This observation suggested that anoxemia might be a stress situation capable of making evident differences between the normal and the schizophrenic subject at the neuro-physiologic level and prompted an examination of other modalities of neurological function.

Method of Investigation

A preliminary physical examination was made on 40 subjects, recording blood pressure, heart findings, tendon and superficial reflexes, age, height and weight. All subjects accepted for the experiment were free of signs of heart disease, myxedema, diabetes, arteriosclerosis and anemia, and were between the ages of 18 and 40. All schizophrenic subjects had been under medical observation for at least a year, their diagnoses had been formally made by the staff of the Worcester State Hospital and confirmed by months of observation. The patients selected had a duration of psychotic symptoms of two to five years. All the usual diagnostic sub-types were about equally represented. Thirteen male schizophrenic patients and 12 male non-psychotic control subjects were used.

The subjects were taken to the experimental room, and the procedure demonstrated and explained. EKG electrodes and the usual scalp electrodes for EEG recording were attached. A rubber face mask containing inlet and outlet valves fitting over the nose and mouth was applied tightly and tested for possible leakage of air during a voluntary forced rapid expiration. The mask

[1] Read at the ninety-seventh annual meeting of The American Psychiatric Association, Richmond, Va., May 5-9, 1941.

From the research service of the Worcester State Hospital, Worcester, Mass.

outlet was connected by rubber tubing to a gas flow-meter that emptied into the room. The mask inlet was connected by tubing to a two-way valve communicating with a large Douglas bag and with the room atmosphere. A neurologic examination was done every 5 minutes for a 20-minute control period while breathing room air. Pulse rate and respiratory rate were recorded at the end of each 5-minute interval. The neurologic examination took between one and two minutes. At the end of the fourth neurologic examination during the control period, a valve out of the sight of the subject was turned so as to give the subject 9 per cent oxygen in 91 per cent nitrogen through the face mask from the Douglas bag, which was constantly refilled from a tank of compressed gas of the same composition. Neurologic examinations, pulse rate and respiratory rate continued to be recorded at the end of each 5 minutes during the ensuing 20 minutes. At the end of the eighth neurologic examination, the valve was again turned so that room air was administered while the same observations were continued for another 10 minutes of the recovery phase. The volume of expired air was recorded throughout at 1-minute intervals. No rebreathing of expired air occurred. Electroencephalographic and EKG tracings were taken during 3 minutes of each 5-minute period. All the neurologic examinations were made by the author and consisted of ordinary clinical observations on the following: the ability of the subject's gaze to follow the examiner's finger to right and left, the appearance of nystagmus and ocular unsteadiness, pupillary size, and reaction to a flash of light, plantar response, biceps, triceps, radial-periosteal, supra-patellar, knee jerk, ankle jerk and Hoffmann reflex. The subject was then asked the question, "How do you feel?" A number of cooperative subjects were also given pencil and paper to write their answer. The temperature of the room was kept between 76 and 80° F. One patient and one control subject, alternating in precedence, were usually done the same afternoon.

Results

Table 1 summarizes the observations in terms of the averages obtained during the control period of 20 minutes compared with the observations made during 20 minutes of 9 per cent oxygen. Considerable differences were encountered in the levels of response during the control period between the non-psychotic and the patient groups. Variations within the control period were large. The direction of change during the anoxemic period was similar in the control and schizophrenic subjects. The magnitude of such change was, however, less in the patient group in some of the phenomena recorded and greater in others. The patients showed about the same variation from their mean as did the control subjects, but both groups showed such large variations from their mean that little statistical significance should be attached to the differences of the two groups, which are small in number for statistical analysis. Most phenomena showed a progressive decrease during the control period with a rise during the anoxemia period and return to the control period level on resuming the breathing of room air. The only phenomena which showed a contrary behavior were pupillary size and response to light, which decreased during the 9 per cent oxygen period.

A second trial was done on 6 of the 13 patients, and a third trial on 3. These were grouped together and are compared with the first trials on the 12 non-psychotic and 13 patient subjects.

Ocular unsteadiness was increased somewhat by anoxemia. One control subject and one patient developed a unilateral plantar response of dorsiflexor type during the 9 per cent oxygen period. In both cases the plantar response was questionable before anoxemia was produced, but a definite difference resulted from the anoxemia and in the patient this was reproduced during the two subsequent trials of anoxemia. Pupillary size failed to decrease in 4 patients and only 2 controls, however. There were two patients whose pupils were abnormally small even under normal conditions.

Slight behavior changes were noticed in, or complaints made by 7 patients and 9 control subjects. These included headache, dizziness, fading of the lights or appearance of red and green rings around the light, overtalkativeness, euphoria, drowsiness, laughter,

TABLE 1

MEAN VALUES FOR CONTROLS AND PATIENTS EXAMINED AT 5-MINUTE INTERVALS DURING 20 MINUTES BREATHING ROOM AIR AND 20 MINUTES BREATHING 9 PER CENT OXYGEN IN 91 PER CENT NITROGEN BY FACE MASK

		Expired air, liters per minute		Pulse rate per minute		Respirations per minute		Tendon jerks		Pupillary size in millimeters		Pupillary light response in millimeters		Nystagmus and ocular unsteadiness		Plantar response dorsi-flexor		Complete or nearly complete loss of consciousness with amnesia	
		Room air	9% O_2	Room air	9% O_2	Room air	9% O_2	Room air	9% O_2	Room air	9% O_2	Room air	9% O_2	Room air	9% O_2	Room air	9% O_2	Room air	9% O_2
CONTROLS		6.53	8.69	75.5	100.4	16.4	16.0	17.50	18.05	4.59	3.49	1.98	1.56	3/12	6/12	0/12	1/12	0/12	3/12
12 Non-psychotic subjects, first trial	Per cent Change		+33%		+33%		−2%		+3%		−24%		−21%		+100%				
PATIENTS		8.28	10.54	81.0	98.23	17.8	17.9	23.55	23.45	4.07	3.21	1.70	1.42	3/13	5/13	0/13	1/13	0/13	0/13
13 Schizophrenic subjects, first trial	Per cent Change		+27%		+21%		+0.6%		−0.4%		−21%		−16%		+67%				
PATIENTS		7.03	9.66	77.8	95.6	17.5	18.0	14.6	15.6	3.40	2.68	1.97	.99	5/9	4/9	0/9	2/9	0/9	0/9
6 Schizophrenic subjects, second and third trials	Per cent Change		+37%		+23%		+3%		+7%		−21%		−50%		−20%				

twitching and restlessness, disturbances in handwriting with perseveration, hypersensitiveness to pain, periodic breathing with periods of apnea, deep breathing and dyspnea.

Three of the control subjects showed considerable change in consciousness with amnesia for that part of the experiment. One of these lost consciousness, for a short time becoming unresponsive to all stimuli employed. No patient showed changes of this degree.

Electroencephalograms of 10 control subjects and 9 patients were made by Dr. Morton A. Rubin. The differences between the non-psychotic and the patient groups were not striking in a qualitative sense, except for the apparent absence of markedly slow waves in the patient group and their presence in three of the control group records on cursory examination.

A summary of a few experiments is given to illustrate the extreme changes noted.

Non-Psychotic Control Subjects

1. L. L., a physician, showed a constriction of the pupils at 15 minutes of 9 per cent oxygen with dilatation on return to room air, a general depression of tendon reflexes after the first 5 minutes with an increase at 15 minutes, with a development at 20 minutes of opisthotonus, bilateral Hoffmanns, rigidity of extremities, forced laughing and EEG changes with apparent marked slowing. He had considerable amnesia for the latter half of the experiment.

2. J. L., a 21-year-old college student and night attendant, who afterwards admitted fatigue, showed slight increase in the left knee jerk and an equivocal left plantar response. After 10 minutes of 9 per cent oxygen his pulse rate, which had risen from 64 to 96, suddenly dropped to 48 and then continued at 64. His color became quite poor and for a time he was completely unresponsive after 15 minutes of 9 per cent oxygen. The left plantar response was a consistent dorsiflexion during the last half of the anoxia period, returning to normal plantar flexion on resumption of room air. The electroencephalogram showed slow waves appearing after 3-4 minutes of anoxemia, reaching a maximum after 12 minutes. On return to room air the EEG record became typical for deep sleep, but now he could be roused easily at a touch or when spoken to. On resumption of room air, the skin became pink and warm, in contrast to its previous coldness and pallor.

Patients

1. N. S., a 21-year-old catatonic patient with periods of stereotyped overactivity, under 9 per cent oxygen showed a rise of 106.6 per cent in pulmonary ventilation. Pupils, which were at first dilated, became of average size, and light response, never brisk, decreased moderately. Tendon jerks increased markedly. Plantar response, originally equivocal, became definitely and uniformly dorsiflexor at the end of 15 minutes of 9 per cent oxygen. Cheyne-Stokes respirations appeared at this point together with twitching of extremities. On return to room air the extremities at once became noticeably hot, moist and flushed, and the pulse fell from 126 to 60.

2. J. L., a 39-year-old paranoid schizophrenic patient, showed nystagmoid movements on lateral gaze, increased arm reflexes, especially on the right with Hoffmann present and the disappearance of the left plantar response during the first half of the experiment. After 5 minutes' 9 per cent oxygen he was obviously exhilarated and became very talkative and restless. He said, "I feel like whistling. I just woke up. I like it here." He spoke of a return of sexual feeling and desire, and that he had suddenly received "an ability to hypnotize the sun." At the end of 10 minutes on room air, he became quiet and spontaneously remarked, "Now you can't read my mind any more. I have to talk to you."

Discussion of Results

Although physiologists report an increase in respiratory rate as well as volume as resulting from oxygen-deficient states, our non-psychotic group showed a higher respiratory rate in the control period than when breathing 9 per cent oxygen. Several subjects in both non-psychotic and patient groups showed Cheyne-Stokes breathing and sudden striking changes in pulse rate. Marked tachycardia occurred in 1 patient and marked slowing of the pulse rate from 92 to 48 occurred in 1 non-psychotic subject. One non-psychotic subject showed a collapse of the pulse and an electrocardiographic tracing suggestive of ventricular fibrillation, necessitating termination of the experiment.

The groups of non-psychotic subjects and patients are small. The variation from the mean is great in both groups. A total of 9 repeated trials on 6 of the patients showed considerable variation in degree of response, but the average of the second and third responses of this group of 6 patients was of the same general nature as on the first trial of the larger number. The clinical impres-

sion was that the schizophrenic group showed a decreased pupillary size throughout the experiment, as compared to the non-psychotic subjects, and that the excursion of light response was less in the schizophrenic group. Clinical measurement of the pupils is difficult and though the artificial lighting was constant and the time for accommodation nearly uniform, no claim for accuracy can be made.

It is interesting that some previous observers of the pupils of schizophrenic patients, notably Bumke, and more recently, Menninger(9), have reported abnormalities which they believed to be of significance.

The increased warmth of skin, flushing, sweating, pupillary dilatation and somnolence apparent in one patient and one control on resumption of room air suggest that hypothalamic stimulation may sometimes result from a short period of anoxemia and its sudden relief.

The proportion of control subjects showing considerable change in consciousness was about the same as reported by Davis, Davis and Thompson. The patient group of the writer, though still small, corroborates the finding of P. Davis that schizophrenic patients do not lose consciousness as quickly as the control subjects in oxygen-deficient atmospheres. The difference in the electroencephalograms of the writer's control and patient subjects on preliminary inspection agrees with that reported by P. Davis. In explanation of this tolerance of anoxemia in the patient group, the writer suggests that perhaps an habituation or acclimatization factor is operative in the schizophrenic group.

Summary

Twelve non-psychotic and 13 schizophrenic subjects were given 9 per cent oxygen in 91 per cent nitrogen for 20 minutes without any rebreathing of expired gasses. Neurologic examinations were made at 5-minute intervals during a preliminary control period, the anoxemic period and during the recovery phase. EEG and EKG tracings were recorded and observations made of the pulse rate, respiratory rate, volume of expired air and psychological state at least once each 5 minutes.

1. In one patient and one control subject unilateral equivocal plantar responses became definitely dorsiflexor under the administration of 9 per cent oxygen.

2. The pupils of the schizophrenic group were smaller than those of control subjects, showed a smaller decrease in size under 9 per cent oxygen, and had a smaller excursion in response to light when tested under anoxemic conditions.

3. Consciousness was only slightly affected in any of the 13 schizophrenic patients, but was markedly altered in 3 of the 12 control subjects.

BIBLIOGRAPHY

1. Bumke, O.: Pupillenstörungen bei Geistes- und Nerven Krankheiten. Jena, G. Fischer, 1906.

2. Strughold, H.: Die medizinischen Probleme in der Substratosphäre. Deutsch. Med. Wochenschr., **65**: 281-285, 1939.

3. Jokl, E.: Medical problems of aviation. Reflex responses at high altitudes. J. Royal Army Med. Corps., **73**: 289-292, 1939.

4. Wilmer, W. H., and Berens, C.: Medical studies in aviation. V. The effect of altitude on ocular functions. J. A. M. A., **71**: 1394-1398, 1918.

5. Thompson, J. W., and Corwin, W.: Experimental anoxemia. Arch. Neurol. & Psychiat., **40**: 1233-1240, 1938.

6. Wespi, H.: Über psychische Insuffizienzerscheinungen bei vermindertem Luftdruck. Arbeits. physiol., **7**: 484-516, 1934.

7. McFarland, R. A.: Psycho-physiological studies at high altitude in the Andes. J. Comp. Psychol., **24**: 147-220, 1937.

8. Đavis, P. A., Davis, H., and Thompson, J. W.: Progressive changes in the human electroencephalogram under low oxygen tensions. Am. J. Physiol., **123**: 51-52, 1938.

9. Menninger, W. C.: Pupillary anomalies in schizophrenia. Arch. Neurol. & Psychiat., **20**: 186-192, 1928.

PSYCHIATRIC USES OF INTRAVENOUS SODIUM AMYTAL

DANIEL J. SULLIVAN, Capt. M.C., U.S.A.[1]

The enthusiasm for the shock therapies has tended to make us forget other psychobiochemical methods of investigation and treatment of mental illness. Popular in the early 1930's was the use of sodium amytal, first as a means of sedating disturbed patients, then in lesser doses to stimulate negativistic and mute patients. (The present use of insulin by shock and subshock technique is somewhat analogous clinically.) It should be remembered that sodium amytal as a diagnostic and therapeutic agent still has wide possibilities for valuable usage in psychiatry; it is impossible however to separate the purely diagnostic from the purely therapeutic results.

In 1930 Bleckwenn(1, 2, 3) introduced the use of sodium amytal in the treatment of neuropsychiatric disorders. It is a barbiturate compound (sodium iso-amyl ethyl barbiturate) and was discovered by Lilly, Co., about 1927. Bleckwenn first used it to produce rest and sleep in disturbed psychotic cases but noted "normal lucid intervals with spontaneous speech and the taking of nourishment are seen in protracted cases of catatonic dementia præcox." He gave the drug intravenously in a 5 per cent solution injected at a rate of 5 cc. per minute, and wanted the hypnotic effect, so gave three grains over the dose which produced corneal anesthesia. From the standpoint of differential diagnosis he noted that the psychoneuroses and functional psychoses required less of the drug for both stimulating and narcotic effects than did the organic psychoses.

Solomon(4) and his co-workers were experimenting with both carbon dioxide and with sodium amytal in catatonic stupors. They noted a similar stimulating effect with each substance but with the carbon dioxide it occurred after the preliminary 2-3 minutes of anoxemic convulsions (shock therapy?) while in the sodium amytal case their dosage first produced two hours sleep, then the patient, who had been mute and resistive, was mentally clear, talkative and cooperative for a half hour. They felt that both drugs reached their similar effects by a physiological action, namely a dilatation of cerebral vessels with subsequent increased oxygen consumption by the brain tissue. They further hypothecated that sodium amytal leads to temporary depression of the activities of the cortical cells and releases from inhibition the deeper cells involved in catatonia. They contrasted it with alcohol, ether and cocaine, in which there is psychomotor hyperactivity with impulsive instinctual outbursts, while with sodium amytal there is release of words rather than of actions.

Lindemann(5, 6) in a very interesting article described the "psychological changes in normal, and abnormal individuals under the influence of sodium amytal." He quoted German psychiatrists who were using "somnifen" a similar barbiturate, by the narcosis technique. They were enthusiastic about its value in functional psychoses, but we have since learned that narcosis treatment is usually unsuccessful in schizophrenia, other than permitting better nursing care to resistive patients, although somewhat more effective in manic episodes. Lindemann worked out the technique of slow injection as he wanted only the stimulating effect. His descriptions are interesting:

> "The normals reported that they had felt serene and well under the influence of the narcotic, confidential and unable to refuse to answer questions." They felt a desire to communicate, a willingness to speak about very personal problems, anticipation of future pleasant activities, a feeling of relief and freedom.
>
> Catatonic patients who had been mute for months became talkative and lost their rigidity and cataleptic symptoms. "In all our patients we found a striking change from a resistive, seclusive attitude to a friendly and emotionally warm communication, with a feeling of well-being and desire to retain the condition produced by the drug." He then goes on in a very significant statement: "It must be emphasized, however, that the drug

[1] Assistant to Medical Director, Highland Hospital, Asheville, N. C. Instructor in Psychiatry, Duke University, Durham, N. C. Medical Director, Asheville Community Mental Hygiene Clinic, Asheville, N. C.

has no influence upon the structure of the delusional ideas and hallucinations present before the experiment." The abnormal thoughts hidden before were communicated after the drug administration; the emotional attitude under the influence of the drug was such as to allow a discussion of the reasons for fear and withdrawal from the outside world.

Lindemann was probably the first one in this country to stress and describe the use of stimulating doses of sodium amytal.

Murray and Burns(7) used the drug intravenously in a group of cases comprising 6 præcoxes, 10 manic excitements, and 8 depressions. The effect on the mute præcoxes was as previously described, but in manic excitements, a rather surprising result occurred—the patients invariably became depressed and cried under the influence of the drug, and the cases benefited were those who remained depressed until improvement or recovery occurred. Ettleson's(8) experience was similar.

Bohn(9) used the drug primarily to control excited patients, but noted that "many mute patients, particularly catatonics, were rendered accessible whereas they had been inaccessible for long periods previously. In this manner it was possible to obtain an idea of their mental content." In addition he observed that it quieted manic patients but agitated depressed patients remained unimproved.

Wagner(10) systematically treated 37 patients all negativistic and most of them mute. He utilized stimulating doses by vein plus psychotherapy in the form of reassurance and suggestion while the patient was under the influence of the drug. In 17 patients there was almost immediate and progressive improvement; 5 of these were removed from the hospital before recovery, 3 became stationary but on a higher level, and 7 made complete recoveries. The remaining 20 patients regressed to their former level following the initial period of cooperation, and treatment was discontinued.

Lang(11) and Lorenze, *et al.*(12), investigated the physiological changes occurring from intravenous injection of sodium amytal, primarily describing the changes in heart rate, BP, O_2 consumption of the brain, and suggested theoretical reasons for the apparent cerebral stimulation produced by subnarcotic doses.

Skoog(13) utilized the drug primarily for narcotic effects but utilized the period of stimulation and partial narcosis for psychotherapy. "The important feature of this therapeutic procedure is an intimate knowledge of the mental aberrations or obsessions to be corrected; then to proceed to apply forceful suggestions for each one at the proper stage of the narcosis."

Gildea(14) and associates, and Thorner (15, 16) described the effects of a stimulating dose as "psychic release; as an anti-inhibitory agent." They found the permanent therapeutic results discouraging in negativistic and catatonic reaction types. Simon(17) has had extensive experience with the drug, using stimulating doses, and finds it of distinct value as a diagnostic aid and in producing temporary rapport for psychotherapy in mute and resistive patients. He states that patients on whom such a procedure was carried out during their stupor or mutism, when spontaneously emerging from their severely retarded state at some later period almost invariably described the periods of sodium amytal stimulation as being pleasant and affording them some temporary release from mental sufferings often so extreme in such retarded states. He advanced the hope (March, 1936) that the use of cortical stimulating drugs might help in prolonging and intensifying the periods of psychomotor activity, and this hope was partially prophetic, as our present technique shows.

Foley(18) used the drug intravenously or intramuscularly to obviate tube feeding, the object being to stimulate the patient to eat spontaneously. He describes the ideal reaction of psychomotor cooperation as occurring in the "depressed catatonic reaction .... regardless of the type of psychoses dealt with." He made no comment on the differential diagnostic value obtainable from the mental content elicited during the cooperative periods.

Herman(19) used the drug to restore the memory in 6 cases of hysterical amnesia after other methods including hypnosis had failed; return of memory occurred in a few minutes in each case. Subsequent course of those cases might be interesting should any of them develop schizophrenia, both because they responded so quickly to the drug, and

to see if any of them develop delusions of "mind control" with reference to the injection of a drug to "control the mind."

Harris(20), *et al.*, had previously used sodium amytal on mental patients and knew that "prenarcotic doses produce transient ameliorating effects in some psychotic patients." Since this reaction suggested that brain function could be favorably influenced by a chemical agent, they decided to use it as a preliminary therapeutic test in patients subsequently to receive insulin shock and metrazol convulsant therapy. In their series of 55 insulin shock cases given a prenarcotic dose of sodium amytal to test psychic response before the insulin regimen was begun, 30 showed a favorable response to sodium amytal, and of these 23 or 77 per cent improved considerably after insulin therapy. The other 25 cases showed no ameliorating response to sodium amytal testing, and of these 16 or 64 per cent failed to respond to insulin therapy. Ten of the insulin failures were given metrazol convulsions and failed to show improvement; of these cases 4 had some amelioration with sodium amytal and 3 of the 4 had at first responded to insulin but subsequently relapsed.

Myerson(21) used amphetamin sulfate intravenously to reduce the narcotic effects of sodium amytal. In depression he noted an elation and talkativeness which was only temporary, but some depressions given sodium amytal and benzedrine sulfate by mouth two to three times daily were made comfortable as far as depth of depression was concerned while the depression *per se* was probably not shortened. He also utilized the psychic stimulation of such a combination, "in the case of shut-in individuals who will not communicate their ideas sodium amytal and amphetamine given in this way (by vein) or with the former given to the point of narcosis and the latter then used to wake the patient up, produce a loquacity which is of value from the standpoint of diagnosis and which might be of value in criminological situations."

Reitman(22) has used sodium amytal in what he terms hypno-analysis, the patient in a darkened room and in a comfortable position. If the patient becomes too drowsy he is given 1:5 cc. metrazol by vein; this was necessary in 50 per cent of cases of which only 10 per cent resulted in interruption of the hypnosis. Caffeine is given by hypodermic routinely about twenty-five minutes after the start of the procedure. After 30 cases he reaches the general conclusions "that sodium amytal was useful in four different ways: as a psychotherapeutic agent; as a rapid method of approach; as a shock; and for diagnostic purposes." He feels that in sodium amytal hypnosis there is an impersonal connection and the patient's personal emotions are not brought into play so that the course of further psychological treatment was not endangered as may occur in ordinary hypnosis. In 2 cases it was possible to rapidly diagnose "situational schizophrenia" when the patients had not responded to ordinary hypnosis. He tried evipal as a substitute for sodium amytal but was unable to carry out hypnosis as it had only a narcotic effect without any stimulation.

Technique

1. Patient preferably lying down, without pillow.

2. Use 10 per cent solution of sodium amytal; give very slowly intravenously in antecubital region at about 1.0 cc. per minute.

3. Average patient gets talkative when he has received 3-6 grs.

4. If he gets too drowsy give 1.5-3.0 cc. metrazol at ordinary speed by vein.

5. Give caffein sodium benzoate grs. 7½ by hypodermic about 20 minutes after the sodium amytal.

6. Must keep stimulating patient by questions or perhaps by physical means (pinch, cold towel, move head, tickle, etc.).

7. May use supplemental cortical stimulants—amphetamine, more caffein.

Contraindications

1. Systolic BP. below 90 unless given a preliminary hypodermic of ephedrine or amphetamine sulfate.

2. Fever.

3. Extensive liver disease (theoretical).

Complications

1. Vasomotor collapse; due to unusual fall in BP.

2. Swallow tongue; apnea. Rare (noted in literature).

Toxicity

Before the synthesis of barbiturate compounds more suitable for intravenous anesthesia, sodium amytal was used rather extensively for anesthesia(29), and its toxic effects are known. In doses sufficient to produce relatively rapid surgical anesthesia, there is considerable fall of blood pressure, usually 30-70 mm. Hg. (rarely 100-200 mm. Hg. in marked hypertension) which lasts one-half to two hours, and then gradually returns to the pre-anesthetic level. The more rapid the injection, the greater the fall. Occasionally there will be apnea, or perhaps deep enough relaxation to cause the tongue to fall back into the pharynx. The apnea responds in a minute or two to artificial respiration, if not spontaneously, while tongue swallowing requires manual return of the tongue to its normal position, so that the airway is cleared. These potentially dangerous situations occur only in rapid induction or in maintenance of far deeper degrees of sedation than ordinary psychiatric uses(9, 12) of the drug entail, except in control of convulsions and in the "narcosis technique." In these later cases the danger of such complications is not common, and when seen they are readily controlled.

Toxicity of sodium amytal is practically negligible. The drug is oxidized by the liver and completely eliminated in eighteen to thirty hours; degradation products do not appear in the urine. According to the bromsulphthalein test liver function is not affected in man by therapeutic doses, either singly or in several doses given within a day or two or after weeks of daily use(33, 10). Urine formation is only moderately reduced, apparently a part of the generalized depression of body functions(34), and there is only a slight decrease in the CO_2 combining power of the blood; urinary function returns to normal in six to twenty-four hours. Toxic effects on the liver have been seen in experiments on animals(30) but disproportionally large doses are needed and it is probable that most of the liver damage is from anoxemia, secondary to fall in blood pressure, slight depression of metabolism, etc., rather than from any innate toxic property of the drug itself. There are no reports of severe allergic response to sodium amytal; a "barbiturate rash" of urticarial or erythematous type may occur after prolonged use of the drug, but such a phenomenon is uncommon.

The "narcosis technique" requires special training and constant close observation of the patient because of the prolonged deep sedation, and from these standpoints is analogous to insulin shock therapy. Palmer and Braceland(31), in a detailed report of six years' experience with this treatment, have thoroughly reviewed the literature and find it the consensus of opinion that sodium amytal is a very safe sedative despite the depth and duration of sedation in the patients undergoing this treatment. Gillespie (32) is of similar opinion, emphasizing that only in the "narcosis technique" are complications and dangers to be expected.

The only general contraindications are marked hypertension, obvious myocarditis and pulmonary infections or edema. These conditions might be aggravated by blood pressure fall and respiratory depression resulting from moderate to larger size doses of the drug above 0.5 gm. Less than 0.5 gm. is safe even in these conditions, if not injected rapidly, *i.e.*, no more than 0.1 gm. per minute. Antidotes for excessive depression from sodium amytal are the usual cortical and medullary stimulants, such as picrotoxin, which is the best, amphetamine sulfate, ephedrine sulfate, which also will offset any untoward fall in blood pressure, lobeline and metrazol.

Illustrative Cases

Case I.—*W. S.—age 42—catatonic stupor* 18 months with beginning contractures. BP. 130/90—injection time 7 minutes—dosage 6½ grs.

About two minutes after the injection started he began to moan and mumble; at 5 minutes after the injection started he began to cry as he was asked if he felt like crying. Then he began to talk, very slowly and rather indistinctly, but gradually better. "My eyes pain me. My eyes is bad." When asked if well treated said, "They do what they can; they gave me all kinds of medicine, brown, yellow." Then he went on to say: "I was

a good mixer," talked of his wife, of having a car, of his 6 children and how fine they were, then said: "I lost my family" and seemed about to cry again but was diverted by a change of subject. With gentle persuasion he was assisted to sit up, then was helped to the dayroom where he drank from the fountain; after returning to his bed he sat up by himself, talked and joked, smoked cigarettes, spoke of how well every one had treated him, of having worked too hard when home and all of a sudden "going nuts; my head got soft, there was nothing in it." He admitted hallucinations of seeing angels, Christ, hearing God's voice. He appeared a little concerned over the stiffness of his hands and knees, wondering if he would ever be any good again. He recognized the various members of the personnel, knew the names of quite a few, talked with two attendants from his home town (Lowell, Mass.) about various persons they knew in common.

The period of very satisfactory psychiatric contact lasted 2 hours. He was alert, pleasant, joked, at times was sorry for the care he had been to the hospital, seemed interested in getting well and being able to go home to his family. He explained his negativism and mutism by saying, "people tell me to do one thing, other people tell me to do the opposite; I don't know what to do." After about 2 hours of being in good contact he gradually relapsed during the next hour until he had returned to his original catatonic stupor.

He was given the drug intravenously 16 times. The average dose was 6 grains and the injection time 7 minutes. His series began with one injection daily for three days, then three times a week for two weeks, then twice a week for one week, and finally once a week for five weeks. The immediate reaction was very good on nearly every occasion. The patient, who for 18 months had been mute, catatonic, bedridden, had contractures and atrophy of disuse of the lower extremities and partially of the upper extremities, became alert, talkative, opened his eyes, frequently joked with the personnel, talked rather freely in answer to questions, fed himself as much as his contracted hands would permit, smoked cigarettes, and looked at the pictures in various magazines. Within an hour following the injections the patient would rather rapidly relapse into his original mute, negativistic, catatonic condition, and would once again be bedridden. During the eight weeks of treatment and subsequently the patient has gained 8 pounds in weight and his general nutrition seems much better. At the present time he is still mute, catatonic, resistive, bedridden, but shows more activity than he did before the treatment in that he frequently talks aloud, spends a good deal of his time with his eyes open. In general it might be said there was slight improvement in this patient's condition.

CASE II.—*M. T.—age 49*—Given 6 grs. sodium amytal very slowly intravenously. B. P. 125/80. During preliminary activities of taking his blood pressure and changing his bedding (soiled with urine and feces) he was very slow in action, very retarded, seemed dazed and confused, picked up and repeated words and action of those about him or questioned them in a perplexed manner. Gradually as the medication was being slowly injected he appeared a little more alert and less perplexed, smiled once or twice and talked relatively freely, but even at the period of maximum stimulation he was still noticeably retarded. He stated he had been in jail, then was in a Veterans Hospital, and finally came here "in a car, through the main gate; where is the main gate?" and looked around the room. Repeatedly asked where he was, if this was a jail, and that he didn't want any more cold packs. He obeyed orders with a fair amount of speed, getting up out of bed, putting on bath robe and slippers, walked to the day room, sat awhile, smoked a cigarette and answered questions, but gradually went back into his original retarded condition; the whole period of fairly good psychiatric contact was 15 minutes. He stated in answer to several questions that he was single, was one of 9 children, had brothers and sisters living in and near Boston, "Is this Boston?", believed this was a jail "in some parts of jails there are nurses and men dressed this way" (pointing to an attendant). He remembered being in jail for drinking, but was completely disoriented for time, place and person. After about 15 minutes of fairly good contact he rather rapidly regressed to his original condition. Although there was very little material obtained as far as a history is concerned, his mental reaction before, during and after the procedure was fairly typical of a moderate degree of catatonic stupor.

This patient was given sodium amytal intravenously daily for three days; the average dose was 6 grains and the average injection time 8 minutes. The case was a diagnostic problem, it being a question whether he was a severe depression or an apathetic, catatonic præcox. Under sodium amytal stimulation he became less retarded, talked a little in answer to questions, showed verbal perseveration and echolalia. A small amount of valuable psychiatric material was obtained from him, sufficient at least to make the diagnosis of dementia præcox the probable one. The permanent results were nil. The therapy was discontinued after the third injection because he was not considered the proper type of dementia præcox to profit by the treatment.

CASE III.—*A. C.—age 30—Navy 12 years*—B. P. 110/80—T. 98.4—injection time 4 minutes—dosage 7½ grs.

Before treatment patient was mute, mildly negativistic, kept eyes closed, head bowed, face expressionless, would walk with guidance and feed self. Had been mute over a year.

During the injection there were jerking movements of head and legs, particularly the right leg but these were transient and spasmodic. In answer to questions he at first shook his head in negation to everything, but during the latter part of the injection he would nod his head in the affirmative when indicated, opened his eyes a few times, turned his head toward the examiner when ordered,

smiled several times, and his facial expression seemed human rather than a "dead pan." He was assisted out of bed, helped attendant put his shoes on, yawned frequently, appeared very sleepy and nodded that he felt sleepy. When it was seen that he was too sleepy to get around by himself and that he wasn't going to talk he was told he could go back to bed; he got into bed himself, took off his shoes at command. He smiled and squirmed when tickled in the ribs and on the bottoms of the feet; nodded that he felt good but very sleepy and relaxed. When told to get out of bed as it was time for supper he began to do so; but was so sleepy that he was told to take a nap first. On one occasion his lips moved as though he were trying to talk but there was no sound emitted. As the nurse left his bedside she said "Goodbye Anthony," and he pulled an arm out from under the blanket, which had been laid over him, and waved goodbye to her with a contented smile.

Although he did not talk and the apparent overdose, which had also been given too rapidly, made him too sleepy to cooperate well, he felt relaxed and pleasant according to his nodded answers, and the facial change from an ironed-out expression to one of emotional play was quite marked. He had not smiled or had his eyes wide open for fourteen months, nor had he answered questions in any way but a negative shake of the head.

The patient received sodium amytal intravenously twice a week for four weeks. The average dose was 4 grains and the average injection time 5 minutes. Before the treatment he was mute, retarded, required spoon feeding, kept his eyes closed all the time, required assistance in dressing and undressing, and had to be led about the ward to prevent him from bumping into things as he kept his eyes closed. Following each injection a period of contact lasting 15 or 20 minutes resulted, and during this time the patient, although he remained mute, would write answers to various questions put to him, and in this way material of psychiatric importance was obtained. At the present time he is still mute, will not write, but is slightly less retarded than before this therapy; he will now do simple manual work, and will dress and undress himself; still keeps his eyes practically shut, but avoids objects and does not need to be led about. In general this patient has shown slight improvement.

CASE IV.—*C. C.—male—age 42.* At the age of 28 this patient rather suddenly went into a depression which only partially cleared over the next two years. At the age of 30 he was given sodium amytal intravenously in stimulating doses and for the first time revealed delusions concerning his own identity and that of his wife. Diagnosis was changed to schizophrenia and his subsequent course over the next twelve years corroborated this diagnosis. There has been a moderate degree of emotional and intellectual (?) deterioration so that he is now well institutionalized at about a 10 year mental level. He was a college graduate and had been a fairly successful young business man.

CASE V.—*S. S.—girl—age 18.* She was admitted to the hospital in an acutely disturbed condition, the general clinical picture being that of manic excitement. After about three months of manic phase she went into stupor which was considered benign. About a month after the stupor began she was given sodium amytal intravenously in stimulating doses and revealed bizarre delusions; accordingly the diagnosis was changed to schizophrenia, catatonic type. Several months later she spontaneously emerged from stupor and became quite excited again but within two or three weeks showed many frank catatonic mannerisms such as attitudinizing, grimacing, hallucinations, inappropriate laughter, etc. She very rapidly deteriorated and six months later gave a classical appearance of hebephrenia.

CASE VI—*L. K.—woman—age 42.* Six years ago this patient was in an automobile accident. Apparently only shaken up she developed constant pain in the lumbar and sacral region and two years later she had an operation for a prolapsed intervertebral disk. At no time has she shown any organic neurological findings but has spent many months in a cast, then a back brace including the left lower extremity, and for the past year has worn a heavy corset plus using crutches. Her personal history and neurological examination suggested a diagnosis of hysterical partial paraplegia more marked on the left. Psychotherapy by means of suggestion and explanation were not successful; hypnosis was next tried but the patient was resistant. Sodium amytal hypnosis was then instituted and after the first session she discarded the crutches and after the second session the special corset. She does not yet have insight but the development of this is the next step in the plan of psychotherapy.

CONCLUSIONS

1. As a sedative, sodium amytal is indicated in control of many disturbed and uncooperative patients and in status epilepticus.

2. In the narcosis technique(25) it is valuable in ameliorating catatonic excitements and in terminating manic episodes.

3. In stimulating doses it may permit accurate differential diagnosis:

(a) Between manic stupor and catatonic stupor(24).

(b) Between schizophrenic mutism and hysterical amnesia and aphonia.

(c) Cases with a good prognosis if given insulin shock therapy(23).

(d) Between organic psychosis, which requires more of the drug for stimulating or narcotic effect, and functional psychosis.

4. In stimulating doses, with or without supplemental doses of cortical stimulants (caffein, metrazol, amphetamine) (28), it affords a means of establishing rapport with mute, resistive, retarded, aphonic, amnestic and uncooperative patients of many diagnostic types (26); and in activating catatonic patients so that they will eat rather than require tube feeding.

5. In hypnotic doses it can be used to assist in inducing hypnosis in patients who do not respond to ordinary psychotherapeutic hypnosis (27).

Summary

Sodium amytal intravenously is a valuable diagnostic and therapeutic agent in psychiatry meriting more usage than given. Many patients in whom shock therapy or hypnosis cannot be utilized can be helped therapeutically or palliatively by suitable administration of this drug. It is convenient, safe and inexpensive, and can be used in stimulating doses, in narcosis regimen or as a powerful sedative.

BIBLIOGRAPHY

1. Bleckwenn, W. J. The production of sleep and rest in psychotic cases. Arch. Neurol. Psychiat., **24**: 365, August 1930.

2. Bleckwenn, W. J. Narcosis as therapy in neuropsychiatric conditions. J. A. M. A., **95**: 1168, October, 18, 1930.

3. Bleckwenn, W. J. Sodium amytal in certain nervous and mental conditions. Wisc. Med. J., **29**: 693, December 1930.

4. Soloman, H. C., Kaufman, M. R., and D'Elseaux, F. Some effects of the inhalation of carbon dioxide and oxygen, and of intravenous sodium amytal on certain neuropsychiatric conditions. Am. J. Psychiat., **87**: 761, March 1931.

5. Lindemann, E. Psychopathological effect of sodium amytal. Proc. Soc. Exp. Biol. Med., **28**: 864, June 1931.

6. Lindemann, E. Psychological changes in normal and abnormal individuals under the influence of sodium amytal. Am. J. Psychiat., **88**: 1083, May 1932.

7. Murray, V. F., and Burns, M. M. The use of sodium amytal in the treatment of psychosis. Psychiat. Quart., **6**: 273, April 1932.

8. Ettleson, A. The use of sodium amytal in the psychoses. Collect. and Contrib. Papers, Elgin State Hospital, 1932.

9. Bohn, R. W. Sodium amytal narcosis as a therapeutic aid in psychiatry. Psychiat. Quart., **6**: 301, April 1932.

10. Wagner, C. P. Pharmacological action of the barbiturates: Their use in neuropsychiatric conditions. J. A. M. A., **101**: 1787, December 2, 1933.

11. Lang, H. B. Colloidal chemistry and psychiatry. N. Y. State Med. J., **34**: 95, February 1934.

12. Lorenze, W. F., Reese, H. H., and Washburne, A. C. Physiological observations during intravenous sodium amytal medications: A preliminary report. Am. J. Psychiat., **90**: 1205, May 1934.

13. Skoog, A. F. A treatment for neuropsychiatric syndromes employing 'Twilight Narcosis.' South. Med. J., **28**: 468, May 1935.

14. Gildea, E. F., Himmich, H. E., Hubbard, O. E., and Fazekas, J. F. Comparative study of changes by various types of drugs in schizophrenic patients. Am. J. Psychiat., **91**: 1289, May 1935.

15. Thorner, M. W. The psychopharmacology of sodium amytal. J. Nerv. Ment. Dis., **81**: 161, August 1935.

16. Thorner, M. W. Psychopharmacology of sodium amytal in catatonia. J. Nerv. Ment. Dis., **82**: 299, September 1935.

17. Simon, Alexander. Personal communication. St. Elizabeth's Hospital, Washington, D. C., February 1937.

18. Foley, W. H., and Rossignoli, V. P. Sodium amytal as a substitute for tube feeding. Am. J. Psychiat., **94**: 639, November 1937.

19. Herman, H. Use of intravenous sodium amytal in psychogenic amnestic states. Psychiat. Quart., **12**: 738, October 1938.

20. Harris, M. M., Horwitz, W. A., and Milch, E. A. Regarding sodium amytal as a prognostic aid in insulin and metrazol shock therapy of mental patients (dementia præcox). Am. J. Psychiat., **96**: 327, September 1939.

21. Myerson, A. The reciprocal pharmacological effects of amphetamine (benzedrene) sulfate and the barbiturates. New Eng. J. Med., **221**: 561, October 12, 1939.

22. Reitman, F. Some observations on sodium amytal experiments: Preliminary report. J. Ment. Sci., **87**: 96, January 1941.

23. Gottlieb, J. S., and Hope, J. M. Prognostic value of intravenous administration of sodium amytal in cases of schizophrenia. Arch. Neurol. Psychiat., **46**: 86, July 1941.

24. Berrington, W. P. Psycho-pharmacologic study of schizophrenia, with particular reference to mode of action of sodium amytal in schizophrenic stupor. J. Ment. Sci., **85**: 406, May 1939.

25. Gillespie, R. D. Narcosis therapy: Critical review. J. Neurol. Psychiat., **2**: 45, January 1939.

26. Longpre, F. Sodium amytal combined with psychotherapy in non-cooperative and cataleptic patients. Massachusetts Dept. Ment. Health, Symposium on Therapy, 5, September 1939.

27. Mallinson, W. P. Narco-analysis in neuro-psychiatry. J. Roy. Nav. Med. Serv., **26**: 281, July 1940.

28. Davidoff, E., Reifenstein, E. C., Jr., and Goodstone, G. L. Amphetamine sulfate—sodium amytal treatment of schizophrenia. Arch. Neurol. Psychiat., **45**: 439, March 1941.

29. Zerfas, L. G., et al. Induction of anesthesia in man by intravenous injection of sodium iso-amyl-barbiturate. Proc. Soc. Exp. Biol., **26**: 399, 1929.

30. Siebert, W. J., and Thurston, E. W. Proc. Soc. Exp. Biol. Med., **29**: 650, February 1932.

31. Palmer, H. D., and Braceland, F. J. Six years' experience with narcosis therapy in psychiatry. Am. J. Psychiat., **94**: 37, July 1937.

32. Gillespie, R. D. Narcosis therapy: Critical review. J. Neurol. Psychiat., London, **2**: 45, January 1939.

33. Swanson, E. E., et al. Repeated administration of amytal. Am. J. Med. Sci., **14**: 246, February 1937.

34. Damashek, W., Foman, J., and Myerson, A. The effect of sodium amytal on metabolism. Am. J. Psychiat., **91**: 113, 1934.

AUTONOMIC NERVOUS SYSTEM FUNCTION IN CHILDREN WITH BEHAVIOR PROBLEMS AS MEASURED BY THE PAROTID SECRETORY RATE[1]

By R. S. LOURIE, M.D., S. E. BARRERA, M.D.

AND

E. I. STRONGIN, PH. D.

INTRODUCTION

With the development by Lashley(1) in 1916 of a remarkably simple device, a suction cup for the collection of parotid gland secretions in human subjects, it was established that there is in man a continuous, resting, unstimulated secretion from the salivary glands. Modification of this suction disc by Winsor(2) and later changes by Strongin, made the method simpler and more readily available. Using this technique, studies have recently been reported(3, 4, 5) from our and other laboratories, chiefly on work with adults, which indicated a relationship between changes in certain mental processes and changes in the parotid rate. From these researches and also from the rich experience accumulated by the Pavlovian school, there has been an increasing tendency to think of changes in the parotid rate not only in terms of cortico-glandular relationships but also in terms of changes in autonomic nervous system function, since the parotid gland is innervated by the latter. The tie between vegetative nervous system function and glandular activity has been pointed out in normal children by Lourie(6). It was also shown that the parotid rate carried some implications, in growing children, of maturation of function of the parasympathetic division of the nervous system. In light of these findings it was thought to be worth while to apply this objective, physiologic measure to children with behavior problems. In this study we are presenting the results of such an evaluation of these children and in addition a follow-up study of the outcome in these cases in terms of the parotid rate.

METHOD

The apparatus used for collecting parotid saliva is called a sialometer. It consists of a two chambered disc, about the diameter of a dime and about three times as thick (Fig. 1).

It has an outer suction compartment and an inner collecting chamber. The disc is held in place over the nipple of Stenson's duct by mouth suction on the tubing leading to the outer compartment. The tubing is then clamped off and the disc thus remains comfortably in place for the duration of the test. The tubing leading from the inner chamber is attached to a pipette which has a bead of water in it. The water column is pushed along in the pipette at the same rate that saliva enters the collecting chamber. The rate is read directly from the calibrations on the pipette. For convenience and uniformity the rate is recorded in hundredths of a cc. per 5 minute period. At least 3 and preferably 6 such periods are necessary for the test to be a valid one.

FACTORS AFFECTING PAROTID RATE

Some of the factors which affect rate and must therefore be considered in performance of the tests may be mentioned briefly. The chief local factors that increase rate are local mouth irritations and swallowing, sucking, yawning, etc.; that is, anything which causes a muscle effect to be exerted on the gland, should be taken into account(23). Among several body factors to be considered are dehydration and position of the body (standing or reclining decreases rate, therefore, the

[1] Read at the ninety-seventh annual meeting of The American Psychiatric Association, Richmond, Va., May 5-9, 1941.

From the department of research psychiatry, N. Y. State Psychiatric Institute and Hospital, and the department of psychiatry, College of Physicians and Surgeons, Columbia University.

Aided in part by a grant from the John and Mary R. Markle Foundation.

subject must be sitting). Among the pertinent nervous system factors are sleep (which inhibits secretion), emotional reactions (which, depending on their intensity, may decrease or increase rate), development of conditioned salivary reflexes (which is difficult and transitory in children), mental work (which usually decreases rate), psychotic states (deteriorated schizophrenics show an acceleration in rate, while in depressions of the manic-depressive type there is almost complete inhibition of resting rate), and lesions of the central nervous system (for instance homolateral increase of rate in hemiplegia(7)). Gastrointestinal factors affecting the rate include hunger and fasting which decrease it while satiation is accompanied by a post-prandial rise. Therefore, all tests should be run about 2 hours after a meal. Pharmacological effects on the parotid secretions, while often paradoxical, still may be sufficiently decisive to alter the rate considerably. Therefore our routine is to eliminate all drugs for 48 hours before testing. It should be noted that in spite of all the foregoing physiologic and psychological factors which might affect the rate, the degree of change is seldom sufficient to change a child's reaction from the range that is characteristic of his age group (see below).

Neuro-Physiological Considerations

Since this study has in its final analysis many implications in autonomic nervous system relationships, a brief word on the probable neural mechanisms of the parotid gland is not out of place. The preponderance of evidence available(8, 9) shows that the secretory activity of the parotid gland is controlled primarily by the parasympathetic nervous system while the sympathetics have no effect on rate. Confirmation of this finding is found in the report that stimulation of the sympathetic fibers to the parotid (provided the parasympathetic fibers have not been stimulated shortly before) produces no perceptible flow from the gland(10, 11). It does produce however a marked change in the subsequent type of saliva secreted by the gland. Some investigators in the field do not agree on this point(12, 13, 14), but close analysis of their discussions reveals that they are translating in terms of the parotid gland (which is a serous gland) mechanisms which they have worked out for the mixed glands. In addition, much of this evidence is based on work with cats whose salivary reactions are known to be different from that of man.

There is definite evidence(13, 15) that there are hypothalamic and cortical centers which exert a modifying effect on the medullary muclei which appear to be "centers" for salivary activity. That this effect is "inhibitory" in nature is evident from the studies mentioned below on normal children. We may conclude, therefore, that in the parotid secretory rate we have a measure of the parasympathetic effect on the gland's secretory activity and we might expect that anything that would produce changes in parasympathetic function would produce corresponding changes in secretory rate. This would include of course the effects of higher brain centers in modifying parasympathetic activity.

Parotid Secretory Rate in Normal Children

In normal children the parotid secretory rate has been found to be a function of growth and development. It has been determined(6) that in young children the rates are extremely high and that with increase of age there is a corresponding decrease in these rates, till late in adolescence they reach the levels which are normal for adults (0.07 cc. per 5 minute period). From Fig. 2, it may be readily seen how this relationship between age and rate follows the pattern of a growth curve. The final figures on which this curve is based are means of all the normal children in each age group (at least 5 at each age level). At 3 years of age, which is the youngest age at which the children could cooperate well enough for a test to be a valid one, the parotid rate averages 0.74 cc. per 5-minute period. There is then a rapid drop in rate till 6 years of age. From there on the decrease with age is a much more gradual, somewhat uneven one. It has been pointed out that in the light of these findings, the parotid rate in normal children provides "a measure of the maturation of the mechanism by which the parotid secretion is mediated, that is, the

autonomic nervous system and more particularly the parasympathetic nervous system. However, it probably is not maturation in an anatomical sense that is measured here because the parasympathetic fibers which act as the secretory innervation of the parotid gland are myelinated at birth. Rather it may be thought of as a maturation of function which becomes evident as the higher centers which affect salivary functioning be-

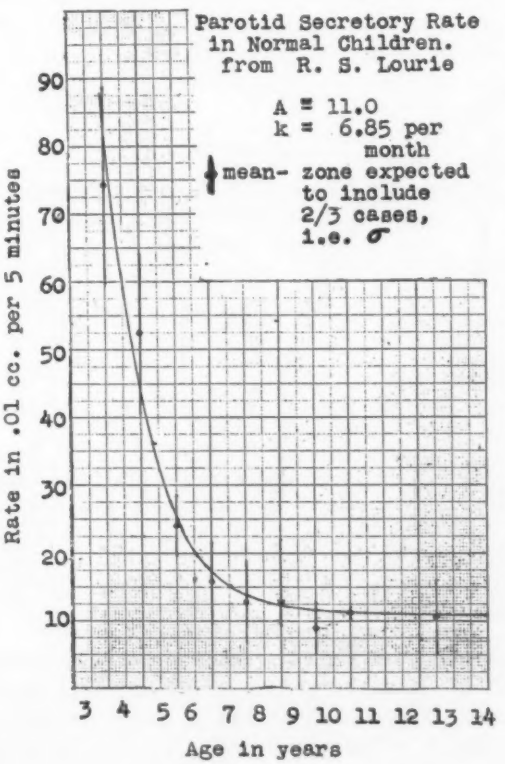


FIG. 2.

come sufficiently developed with increasing age to exert their 'inhibitory' effects on the rate of flow"(6).

Hormonal factors and the effect of total body water on parotid rate have been suggested as being possible modifying agents. Most available evidence points to a functional interdependence of the vegetative nervous system and endocrine glands, but as yet this relationship is unclarified(16, 17). The effect of total body water on the rate is evident in the case of dehydration(18, 19), but excessive hydration produces no changes in parotid rate of secretion.

PAROTID SECRETORY RATE IN BEHAVIOR PROBLEM CHILDREN

Determining the rate of unstimulated secretion from the parotid gland in children with primary behavior problems presented the additional problem of the proper selection of cases. Organic neurological lesions may affect the parotid rate and therefore all such had to be ruled out before we could include a case in our series. The children with psychoses and those with behavior problems superimposed on mental deficiency we felt should be placed in separate groups. Psychopathic personality, it was felt, was a distinct enough entity in children for us to establish this, too, as a class by itself. When delinquent children were encountered, however, we found that they generally could be classified into one of the above groups; more than 80 per cent of the so-called delinquents we found in our random sampling could safely be called primary behavior problems; *i.e.*, their status as delinquents usually depended entirely on whether their personality difficulties had gotten them in conflict with the authorities.

The cases for this series were studied on the children's service of the New York State Psychiatric Institute, the pediatric psychiatric clinic of Babies Hospital, the children's observation ward of Bellevue Psychiatric Hospital and the Bureau of Child Guidance of the New York City Board of Education; all centers where children are given a thorough appraisal. The cases were all unselected except by diagnosis. For lack of a better one, the present somewhat unsatisfactory standard classification which divides primary behavior problems into habit disorders, conduct disorders and neurotic traits was used.

The procedure included testing the resting parotid rate in an individual under the conditions outlined and repeating this rate a day to a month later. From six months to a year after the original tests were done, a follow-up was attempted to find what had occurred in the child in terms of his symptomatology and, wherever possible, his parotid rate. The child was then classified on the basis of symptoms or lack of them, as being either much improved or "cured," improved

or unimproved. About 12 per cent of the cases could not be followed.

A total of 97 cases were studied under this routine, 69 boys and 28 girls. The range in age was from 6 to 14, ages in which, as we have seen from Fig. 2, the unstimulated parotid rates in normal children have become comparatively stabilized, showing only a gradual decrease with further advance in age. The highest average rate found in this

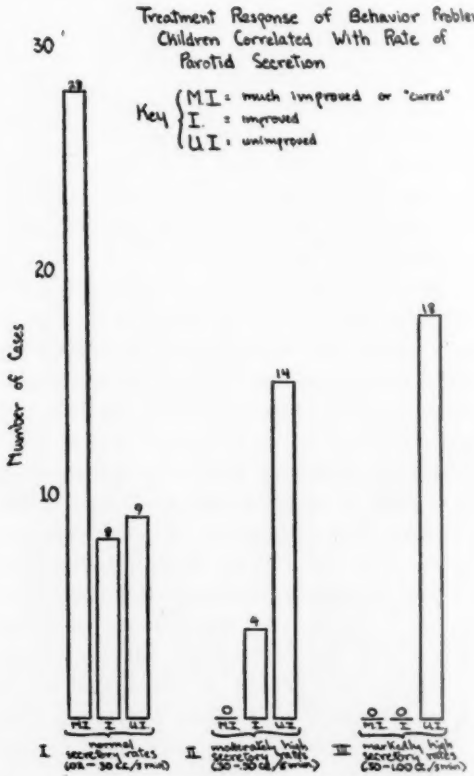


FIG. 3.

age range in our normal series was 0.26 cc. per 5 minutes. We felt justified, therefore, in setting 0.30 cc. per 5 minutes as the limit above which a rate could be called abnormal. In dealing with the abnormal rates it was found convenient to divide these also into two groups; those with moderately high rates (0.30 to 0.50 cc. per 5 minutes) and those with very high rates (0.50 to 1.00 cc. per 5 minutes).

Fig. 3 and Table I show the more important of the findings. From it we may see that of our total of 97 cases of behavior difficulties in children, 52 (53 per cent) had rates that fell within the normal range, while 45 (47 per cent) ran abnormally high rates. The latter group has been subdivided into 25 (25 per cent) cases with moderately high rates and 20 (21 per cent) with extremely high rates.

When these figures are analyzed they would seem to point to a relationship between normality of rate (*i. e.*, possibly a maturation of autonomic nervous function to the age level) and potentiality of improvement of symptoms. In the group which showed normal rates 28 (53 per cent) had improved

TABLE I

TREATMENT RESPONSE OF BEHAVIOR PROBLEM CHILDREN CORRELATED WITH RATE OF PAROTID SECRETION

	Much improved or "cured"	Improved	Unimproved	Not followed	Total
Normal rate (0.02-0.30 cc. per 5 minutes)	28	8	9	7	52
Moderately increased (0.30-0.50 cc. per 5 minutes)	0	4	17	4	25
Markedly increased (0.50-1.00 cc. per 5 minutes)	0	0	18	2	20
					97

markedly or were symptom-free. Eight or 15 per cent of the individuals had improved in their symptoms, while 9 or 17 per cent showed no improvement. In the second group, those with moderately high rates, none could be classed as much improved, only 4 or 16 per cent showed some improvement and 17 or 68 per cent were unimproved. Even more striking was the third group, which included those children with extremely high rates. Of these subjects none had shown any improvement of symptoms (*i. e.*, if they had cleared up the original symptoms, other symptoms had taken their place); 18 or 90 per cent of these children (all that could be followed) were unimproved. It must be kept in mind before finally evaluating these results that not all these children had equal opportunity for treatment in the interval between the original test and the follow-up. Some who were unimproved had

FIG. 1.

reading disabilities which were still uncorrected and for which no remedial program had been arranged. Others were still subjected to the same unfavorable environmental conditions. A few had been institutionalized. Members of all three groups were exposed of course to these factors. On the whole, however, these figures would seem to be sufficiently clear cut to imply that the child with the normal secretory rate who gets into difficulty under stress and strain in his environment would seem to have a better chance to improve while the individual with the extremely high rate seems to have a poorer prognosis for improvement in a short time.

A statistical analysis was undertaken under the guidance of Dr. Joseph Zubin of the Psychiatric Institute staff to determine the possibility of these figures occurring by chance. Using the method of *chi* square it was found that less than once in every thousand times, could these figures occur by chance. Evidently we may think of them as being valid.

It was thought important, especially because of the apparent correlation between abnormality of rate and prognosis, to find whether any individual had changed his secretory pattern in the six months to a year elapsed between the tests. We were able to repeat runs on 22 of the 97 children. Of those repeated there were 5 who had had normal rates, 6 of those with moderately high rates and 11 of those who had fallen originally into the extremely high group. None of the previously normal rates changed. Only 1 of the second group's rates had changed and that was altered downward on the scale. Three of the fast secretors had likewise changed sufficiently in rate to bring them into the middle group. In each case where change in rate had taken place the change did not immediately coincide with an improvement in symptoms.

It is interesting to note that the only type of behavior problem which consistently fell into the same group as far as parotid activity was concerned was the anxiety states. Not only did all the 6 children of this type fall into the normal group but their rates were always low, ranging from 0.01 to 0.6 cc. per 5 minutes, and averaging 0.03 cc. per 5 minutes. All these cases cleared up their symptoms, although two subsequently suffered transitory returns to their anxiety symptoms.

Discussion

We have concluded that there are relationships between the cortex, midbrain and bulbar centers for salivary activity. We have also felt with Foerster(20) that the newborn child is a thalamus-pallidum being in whom only the sub-cortical centers are functioning. We have postulated that as the child's higher centers mature and exert their inhibitory influence on the lower ones, this increasing ability to inhibit is reflected in the changes in parotid rate with age. It is accepted theory that this inhibitory effect of the higher centers is widespread over all subcortical functions. We may think of it as also having an influence on behavior, which is only a resultant of many factors controlled by the nervous system. This influence on behavior must be reflected at any given age level by the balance between the subcortical and cortical influences.

With this in mind let us consider as an example a 10-year-old child who cannot apply a "check" element to his activities, who shows evidence of disorganized behavior and who at the same time has a consistently high rate of parotid secretion, which is the same as that of a normal 3-year-old. We may suspect that in such a child the behavior is a reflection of the same failure or delay in maturation that is represented by the parotid rate. Certainly there is even more reason to suspect that this is true when we find that those children who have normal secretory rates seem to have a better chance to clear up personality disturbances that they may encounter than have other youngsters with similar behavior problems but running abnormal parotid rates.

In other pathological states there is likewise evidence for this correlation between type of behavior and salivary rate. It is generally agreed that the chronic impulsiveness, aggressiveness, overactivity, etc., of the classical post-encephalitic patient represent a loss of ability to apply a "check" to behavior. Witness also in many such patients

the increased rate of parotid secretory activity. This represents more strictly a functional "regression" to a lower level of maturation than a delay of maturation.

Another striking example of the relationship between "regressive" disturbances in conduct and parotid activity is to be found in the study of the parotid rate in schizophrenia by Strongin and Hinsie(3). Their studies now take on new implications from our findings in normal children. They report that the deeper the deterioration, the higher goes the rate. In other words, as the schizophrenic regresses to more infantile levels to the point where he is, for example, smearing feces and returning to primitive grasping and sucking reflexes, the parotid rate too goes back to infantile levels.

The results found by the same authors in depressions of the manic-depressive type may be thought of in the same terms. If, as has been suggested, depressions of this type are the result of the higher brain centers applying an excessive degree of "inhibition" on lower centers, it is also significant that there is during these depressed states a complete inhibition of resting parotid activity.

Another point of view from which the results in this study may be evaluated is that of constitutional medicine. Following the terminology of Pende(21) we could think of these children who have a tendency to retain high or infantile, immature salivary rates as showing hypoevolutism. (It may also be thought of as representing the somatic component of a psychosomatic whole.)

It is interesting to examine Krasnagorski's (22) classification of physiological types of children in light of the evidence we have from these results. He has postulated,

1. The central well balanced type in which the normal infra-cortical processes are well regulated by the strong cortical activity. These children should and do have normal parotid rates.

2. The subcortical type in which the infra-cortical processes have the upper hand over the cortical influences. In these cases the parotid rates are high.

3. The cortical type in which the balance is shifted toward a predominance of cortical activity over subcortical activity (anxiety states?). These show a comparatively low secretory rate.

4. The anergic or hypodynamic type in which both the cerebral cortex and subcortical areas are equally hypoexcitable. These children show any type of rate depending on superimposed conditions, but are usually low. Krasnagorski feels that this is the type of child who goes into psychoses.

No correlation has been found in this study between secretory rate and severity of symptoms.

In conclusion it may be said that while the parotid secretory rate in children would appear to be an index of parasympathetic activity, it should never be thought of as an absolute index. Its greatest value will be in its use as one in a battery of objective autonomic nervous system tests that may be applied to the study of disease states.

BIBLIOGRAPHY

1. Lashley, K. S.: The human salivary reflex and its use in psychology. Psychol. Rev., **23**: 446, 1916.

2. Winsor, A. L.: Conditions affecting human parotid secretion. J. Exper. Psychol., **11**: 355-363, 1928.

3. Strongin, E. I., and Hinsie, L. E.: Parotid secretory rate in schizophrenic patients. J. Nerv. and Ment. Dis., (a) **87**: 715, 1938.

4. Strongin, E. I., and Hinsie, L. E.: A method for differentiating manic-depressive depressions from other depressions by means of parotid secretions. Psychiat. Quart., **13**: 697-704, 1939.

5. Birukov, D. A.: Unconditioned salivary reflexes in man. Rostov on Don, 1935.

6. Lourie, R. S.: Autonomic nervous system function in normal children as measured by the parotid secretory rate. (In press.)

7. Lashley, K. S.: Reflex secretion of the human parotid gland. J. Exper. Psychol., (b) **1**: 461, 1916.

8. Heidenhain, R.: Beiträge zur Lehre von der Speichelabsonderung. Studien, d. physiol. Instit. zu Breslau, Heft 4, Leipzig, p. 1, 1868.

9. Langley, J. N.: The salivary glands. Schafer's Textbook of Physiology. Edinburgh and London, Y. & J. Pentland, **1**: 475, 1898.

10. Howell, W. H.: A Textbook of Physiology, 14th ed. Philadelphia, and London, W. B. Saunders Company, 1940.

11. Best and Taylor: Physiological basis of medical practice. Baltimore, William Wood & Co., 1937.

12. Babkin, B. P.: The innervation of the salivary glands. Tr. Roy. Soc., Can., **25**: 205 (Sec. V.), 1931.

13. Babkin, B. P.: The physiology of the salivary glands. Dental Science and Dental Arts, Ed. by Gordon, 219-249, Phila., Lea & Febiger, 1928.

14. Baxter, H.: The influence of section of the cervical sympathetic nerve and extirpation of the superior cervical ganglion on the composition of the parotid saliva in the dog. Am. J. Physiol., **97**: 668, 1931.

15. Papez, J. W.: Cerebral mechanisms. J. Nerv. and Ment. Dis., 89: 145, 1939.

16. Cattel, M., Wolff, H. G., and Clark, D.: The liberation of adrenergic and cholinergic substances in the submaxillary gland. Am. J. Physiol., 109: 375, 1934.

17. Sacks, J., and Kim, M. S.: On the non-existence of a hormone for salivary secretion. Proc. Soc. Exp. Biol. and Med., 27: 193, 1929.

18. Gregersen, M. I.: Conditions affecting the daily water intake of dogs as registered continuously by a photometer. Am. J. Physiol., 102: 344, 1932.

19. Winsor, A. L.: The effect of dehydration on parotid secretion. Am. J. Psychol., (1), 42: 602-607, 1930.

20. Foerster, M.: Antidrome leitung im sensibeln Nerven. Klin. Woch., 1453, 1922.

21. Pende, N.: Constitutional inadequacies, Lea and Febiger, 1928.

22. Krasnagorski, N.: Physiology of cerebral activity in children as a new subject of pediatric investigation. Am. J. Dis. of Children, 46: 473, 1933.

23. Korchin, B., and Winsor, A. L.: The relationship of certain organic factors to individual differences in human parotid secretory rate. J. Exper. Psychol., 27: 192-194, 1940.

DISCUSSION

E. R. Clardy, M. D. (Orangeburg, N. Y.).—At the Rockland State Hospital children's group we have studied behavior problem children over a period of about five years. During our observations of these children we have been struck by manifestations of infantile reactions, especially in the psychic fields, that is, in children who according to age should have been much more mature emotionally. Recently we have noted that there seems to be considerable similarity in the electroencephalograms of behavior problem children, ranging in ages from 8 to 12 years, and those of infants. This observation may also denote an immaturity of cortical function, and, therefore, coincide with the disturbances of the parotid secretory rate, as described by the authors.

Although the scope of this paper includes mainly one investigation, it would be interesting to compare other symptoms of autonomic nervous system disturbances. For instance, we have found dilated pupils (denoting sympathetic disturbance) in children with schizophrenic reactions. Also in various types of behavior disorders we have observed numerous other vaso-motor disturbances; such as extreme blushing, blanching, lachrymation and sudden changes in the pulse rate. Even enuresis likewise might be studied as an infantile reaction due to lack of cortical control.

The problem coming to our mind as we survey this paper is: Why this sub-cortical functioning or lack of cortical control? Is it organic, or merely regression, or fixation on infantile levels because of so-called psychogenic factors? In some cases we have found evidence of cortical pathology, as demonstrated by electroencephalograms, pneumoencephalograms and psychological tests. On the other hand, a number of cases have shown no evidence of brain pathology, but appear to have been caused by environmental factors found especially in the home situation, and when these causative factors have been cleared up the child goes on, or returns to a more mature form of functioning. His behavior disturbances clear up, he becomes more emotionally mature and stable, and therefore as he gains more voluntary control, evidence of autonomic nervous system disorders decreases or disappears.

Although the paper has implied that the test may be of value as a prognostic index, it cannot, as yet, be taken as a criterion; that is, without continuing observation of many cases over a considerable period of time. This evidence of parasympathetic disturbance should be considered as an associated phenomenon found in conjunction with certain behavior disorders in children. It is a test that will probably aid us further in knowing the organism as a whole, and the investigation should be continued.

PREFRONTAL LOBOTOMY IN CHRONIC PSYCHOSES[1]

MAGNUS C. PETERSEN, M.D.

Superintendent, Willmar State Hospital, Willmar, Minn.

AND

HAROLD F. BUCHSTEIN, M.D.

Minneapolis, Minn.

Since January 6, 1941 we have performed prefrontal lobotomies on 46 patients in the Willmar State Hospital, all of whom were suffering from psychoses of long standing. Eighteen were male and 28 were female. The ages varied from 27 to 63 years; the average was 44 years. The interval between the last commitment and the performance of the operation ranged from one to 32 years with a mean of 11 years.

Psychic tension was the criterion used in the selection of the subjects for the operation. No one suffering from organic psychosis was included. Permission for surgery was obtained from relatives in all cases.

TABLE I

SUMMARY OF PSYCHIATRIC DIAGNOSES

Psychoneurosis	1
Affective psychoses	
Manic	1
Depressed	8
Schizophrenic	
Hebephrenic	26
Catatonic	7
Paranoid	3

The operation is a surgical division of the white matter of the frontal lobes in the plane of the coronal suture. We have employed a technic essentially similar to that of Freeman and Watts(1). A single burr hole is placed on each lateral aspect of the skull and a specially designed leukotome is introduced and guided in the plane of the coronal suture as determined by external marking. This technic was chosen in preference to that described by Lyerly(2), because we believe it to be easier of performance, to permit more accurate sectioning of the white fibers and to produce less scarring, particularly of the cortex.

Experience with cadaver surgery and with some of our earlier cases impressed us with the importance of adhering strictly to the technical directions if the cut is to be placed properly and serious bleeding avoided. It does not mean, however, that complicated apparatus is necessary or that the procedure is time consuming. We have developed a simple, yet adequate, technic by which a bilateral prefrontal lobotomy is performed routinely in less than one hour without any effort at speed.

By proper timing of the pre-operative medication we found it possible to operate on almost any patient under local infiltration anesthesia. It is our practice to give the patient three grains of pentobarbital sodium by mouth an hour and a half before leaving the ward. Ten minutes before coming to the operating room a hypodermic injection of morphine sulphate, gr. ¼ and hyoscine, gr. 1/150 is given. In only 4 cases was it necessary to reinforce this sedation with small doses of pentotal sodium given intravenously.

No operative mortality was encountered. One patient died 11 days after the operation under circumstances which will be discussed later. No patient went into surgical shock during or after the operation. In no instance was the infusion of blood or other fluid indicated as a supportive measure. In only 2 cases was it necessary to administer adrenalin during the operation to raise the blood pressure. One patient stopped breathing after the intravenous injection of .15 Gm. of pentotal sodium. The breathing was promptly restored by artificial respiration and the operation was done without any further difficulty.

[1] Read at the ninety-eighth annual meeting of The American Psychiatric Association, Boston, Massachusetts, May 18-21, 1942.

Flushing and sweating were noted in most of our patients after the brain tissue was cut. One or the other of these manifestations might be absent and there was a great variation in degree. Whether or not the intensity of the vasomotor reactions is of any prognostic value remains to be seen. It can be stated, however, that they were marked in the patients who showed the most improvement. In general the flushing and sweating were more pronounced in the affective group than in the schizophrenics.

Various neurological changes were noted after the operation. The two most frequent were an upward and lateral deviation of the eyes and a positive Babinski sign. The changes were transitory and as a rule could not be observed the following morning.

Only one patient vomited during the operation while 13 vomited afterwards. Hiccoughs were observed in 4. Five complained of dull headache in the frontal region. These symptoms were neither persistent nor severe. Later 2 individuals volunteered the information that they were completely relieved of severe headache from which they had suffered for several years previously.

A lowering of the blood pressure with a slowing of the pulse was a constant occurrence. The pressure usually returned to the preoperative level in the course of a few weeks while the pulse remained slower in most cases. In one of 2 patients with hypertension the blood pressure has remained lowered for ten months while in the other it has returned to the former level.

A marked increase in appetite is noted in most of those operated on. Several, who showed aversion to food before the operation, ate with relish afterwards. All but 4 of our patients have gained in weight; one as much as 108 pounds in nine months.

The sugar tolerance was studied in 18 individuals before and after the operation. A total of 40 dextrose tolerance curves were made. Each curve is composed of 9 determinations made in the course of 5 hours. In 13 there was a definite increase in the tolerance shown by a lowering of both the maximum and minimum values. Five showed an increase in the maximum while only one had an increase in the minimum value.

The gastric secretion was studied before and after operation in 5 patients in accordance with the technic described by Bloomfield and Polland(3). In 4 cases there was not only a marked increase in the free hydrochloric acid, but the response to histamine was much prompter. One patient showed a diminished secretion of free acid, but in her case there was hyperacidity before the operation was performed.

One patient died on the eleventh day following the operation. The first week she was drowsy and confused. During the 4 days preceding death there was a marked mental improvement. She would read newspapers and she was beginning to converse. At the time of death she was sitting up in bed eating supper when she suddenly fell backward and died. At autopsy the mouth and pharynx were found filled with food. The wounds had healed and it was only by close inspection that the scar in the cortex was located. There was no evidence of hemorrhage. Sectioning of the brain showed that the head of the caudate nucleus on the right side had been cut.

Some time later we observed a patient becoming cyanosed while eating. Investigation showed that the mouth was filled with food. This was removed and the cyanosis promptly disappeared. Evidently he was unable to concentrate on three tasks simultaneously. He could carry the food to the mouth and chew it but was not able to carry out the third operation, that of swallowing at the same time. He would swallow when ordered to do so. This gave us a clue as to the cause of death in the other case. Freeman and Watts(1) recite a similar experience with one of their patients. This incident impressed upon us the necessity of supervising the patients closely at meal time for a while after the operation, especially when there is considerable inertia.

Untidiness lasting from a few days to several months is an almost universal occurrence. This is due to a lack of attention rather than to regression. The patients may urinate or defecate in their clothing without showing any embarrassment. One woman, who before the operation was very fastidious, became untidy for about a month afterwards. When asked why she was so

careless, she laughed and answered, "It seems to be a custom around here." This tendency is transitory as a rule. It is well to caution the relatives, however, especially when the patient returns home a short time after the operation.

Relief from tension, anxiety and worry is a most striking phenomenon. A complete relaxation is noted immediately after the cutting of the second side. The tense and pinched expression disappears and the individual look years younger. When consciousness returns, anxiety and worry usually are gone. The old complaints may be recited for a time but in a matter-of-fact way. The emotional component is lacking. In time the complaints themselves are forgotten.

In the schizophrenic patient the auditory hallucinations may disappear completely after the operation. It is not unusual for the individual to gain the realization that the voices did not have an external origin. Even though the hallucinations may persist, the patient reacts differently toward them. Usually he learns that they are not real and he attempts to push them out of consciousness and disregard them.

As aptly stated by Freeman and Watts, "Following prefrontal lobotomy there is a shift of the personality in the direction of extraversion of the ego." This tendency was observed in all our patients. Although less pronounced in the schizophrenic than in the depressed, it was present nevertheless.

We are in complete accord with Strecker (4) when he emphasizes the importance of post operative reeducation. Some degree of contact can be made with many patients who formerly were inaccessible. Although our opportunities for intensive individual training are limited, we are attempting to stimulate the interest of the patients and to keep them occupied. It is noteworthy, that if a patient was returned to a more untidy or disturbed ward, he tended to relapse to his former habits. Yet none of those so transferred have become as difficult to deal with as they were before.

Aside from the death previously described, we have had no unfavorable reactions following the operation. In no case has there been an aggravation of the psychosis. None of our patients has developed convulsions, although several had previously been treated with metrazol and insulin. Two patients whom one of us (M. C. P.) (5) treated with insulin intravenously in 1938 had 65 and 68 convulsions respectively in the course of that treatment. If a convulsion reaction pattern is set up by such procedure, a good foundation was laid. The prefrontal lobotomy should have completed the conditioning.

Of the 29 operated on in 1941, 6 have returned home. Four of these are adjusting socially while 2 get along under slight supervision. A seventh has improved to such an extent that he could get along well at home provided the family was willing to accept him. The results in the remaining cases are tabulated in Table II. Seventeen additional cases were operated on less than a month ago; it is too early to make any statement as to the outcome of these cases.

TABLE II

RESULT OF PREFRONTAL LOBOTOMY IN 29 CASES PERFORMED IN 1941 *

Diagnosis	Total	Social adjustment	Markedly improved	Slightly improved	Unimproved	Died
Psychoneurosis ..	1	1	..	..	..	..
Affective psychosis						
Depressed	3	2	1	..	..	..
Schizophrenia						
Hebephrenic ...	19	1	9	8	1	..
Catatonic	4	..	2	2	..	..
Paranoid	2	..	..	1	..	1 †
Total	29	4	12	11	1	1

* Seventeen cases operated on in April 1942 are not included.
† Died 11 days after operation.

While these results are not spectacular, it must be remembered that they were formed from clay rejected by the potters. These people have passed through the hands of the private practitioner, the hospital for acute cases, and the receiving state hospital before they gravitated to the state hospital for chronic patients. Here many of them were relegated to the so-called back wards. It is fair to assume that most of them had been exposed to psychiatric study somewhere along the way. The records show that many of them had received various forms of treatment, including shock therapy. Since the ma-

jority had been hospitalized for years, spontaneous remission becomes a negligible factor. Hence we may conclude that the results are due to the operation. Therefore, we consider prefrontal lobotomy a valuable method of treatment in certain chronic psychoses. It kindles hope in a realm of psychiatry where despondency reigns.

CASE REPORTS

CASE 1.—O. W., female aged 57, was committed to a state hospital on December 2, 1932. Two weeks previously she deliberately burned her face, shoulder and arms on a radiator. Six years earlier she experienced a mental upset lasting about 4 months. On admission to the hospital she was inaccessible, mute, resistive, and at times assumed rigid attitudes. She refused to eat and tube feeding became necessary at intervals. A diagnosis of dementia præcox, catatonic type was made.

The mental condition remained essentially unchanged. She developed pulmonary tuberculosis early in 1936, gradually lost weight and feeding was a constant problem.

On June 16, 1941, a bilateral prefrontal lobotomy was performed. During the preceding two weeks she was more resistive than usual and it was necessary to tube feed her twice a day. On the morning after the operation she ate heartily. When asked how the food tasted, she answered, "My it is delicious." The appetite became excessive and her weight increased from 89 to 197 pounds in 9 months. Coincidentally with the increase in appetite there was an improvement in the lungs and in a short time the tuberculosis became arrested.

At first there was considerable inertia. While some of this persisted, the patient gradually developed an active interest in ward activities. Although she did not gain complete insight and some of the psychotic experiences remained hazy in her mind, there was a marked improvement in the mental condition. Home leave was granted on April 11, 1942.

CASE 2.—C. B., a 62 year old housewife, was committed to a state hospital on March 31, 1939. Four years previously she began to complain of abdominal distress and soon became bedridden. One physician after another was consulted. Each, in turn, made a different diagnosis. The gastrointestinal tract was studied from end to end, but no abnormalities were found. There was a moderate hypertension and Roentgenograms showed evidence of osteoporosis. She continued to complain bitterly of burning pain all over the body and insisted that the intestines were tied in knots, and that eating was of no use as the food could not be absorbed.

She was transferred to the Willmar State Hospital on April 10, 1940. We managed to get her out of bed, but she would sit with legs drawn up, body bent over and head covered, moaning incessantly. By holding her hand and using firm persuasion, she could be induced to walk across the room.

A bilateral prefrontal lobotomy was performed on March 25, 1941. The following morning she rested comfortably in bed, the body stretched out full length. She was somewhat confused and after breakfast insisted on getting out of bed and going to work. About a week later she was allowed to get up. In the course of a few days she commenced to do tasks about the ward on her own initiative.

On April 20, 1941, she left the hospital with the understanding that she was to stay with relatives for a couple of weeks. After visiting a few days she returned to her own home where she immediately took over all the household duties. In addition she undertook to clean the house from attic to cellar. The social adjustment is complete and the relatives consider her entirely normal.

CASE 3.—D. B., a 39 year old male, was committed to a state hospital on September 5, 1940. The parents separated when he was a small child and he was reared by the mother. She later remarried, but the step-father died in 1920. The patient and the mother were greatly attached to each other. As a child he was shy, sensitive and quiet. He was large for his age. This and the fact that it was financially difficult for the mother to keep him as well dressed as other children bothered him. He took but little interest in the opposite sex and never went out with girls.

On October 9, 1939, he fell from a four foot platform on which he was working, striking the back of the head and the left knee. The fall did not render him unconscious. Because the left leg gave way under him, he was taken to a general hospital where he remained until October 22. On that date he became "delirious" and was transferred to a mental hospital. He was hallucinated for several weeks and expressed fear of being shot. By the first of December he had improved to the extent that he could return home.

For a short while he got along fairly well, but then he became preoccupied, acted peculiarly and stared vacantly into space. He would laugh to himself with no apparent reason. He changed religious affiliation and became irritable and at times somewhat threatening towards the mother. It again became necessary to hospitalize him on August 28, 1940. In the hospital he refused to eat and struck a nurse when she brought him medicine. It was then that he was committed.

In the state hospital he was suspicious and evasive. He admitted having auditory hallucinations three weeks before the accident, but would not say what the voices told him. He felt that he was being watched and that the physicians and nurses were working against him. He also expressed fear of being killed.

On January 3, 1941, he was transferred to the Willmar State Hospital. Here he was mute most of the time. When he did talk, it was in a vague and evasive manner. At times he would cry and say that the people in the hospital had murdered his mother.

A bilateral prefrontal lobotomy was performed on October 23, 1941. For several weeks afterward he was confused and untidy. At first it was difficult to engage him in conversation, but as time passed he spoke more readily. Gradually his attitude became freer. He enjoyed appearing before a medical group and spoke freely of himself. He discussed his delusions and hallucinations without any embarrassment saying that they had completely vanished. He explained that before the operation he was in constant fear of being killed and was afraid that he might say something which through cosmic influences might cause death to his mother. It was for the same reason that he refused to eat and to take medicine. He further stated that he did not actually hear the sound of the voices, but the thoughts came to his mind from somewhere. While formerly he wanted to be alone he now enjoyed associating with people.

He was allowed to go home on February 15, 1942. Although he at first tended to be somewhat careless in his manners, the adjustment has been satisfactory. Our last report, received April 14, stated that he had been accepted for service in the home defense forces.

BIBLIOGRAPHY

1. Freeman, Walter, and Watts, James W. Psychosurgery. Charles C. Thomas, 1942.

2. Lyerly, J. G. Transection of the deep association fibers of the prefrontal lobes in certain mental disorders. South. Surgeon, 8: 426, October 1939.

3. Bloomfield, Arthur L., and Polland, W. Scott. The diagnostic value of studies of gastric secretion. J. A. M. A., 92: 1508, May 4, 1929.

4. Strecker, Edward A., Palmer, Harold D., and Grant, Francis C. A study of frontal lobotomy. Am. J. Psychiat., 98: 524, January 1942.

6. Petersen, Magnus C., and Lutz, Elmer H. Intravenous injection of insulin in the treatment of schizophrenia. To be published in J. Nerv. and Ment. Dis.

THE RÔLE OF THE PSYCHIATRIC SOCIAL WORKER IN THE SELECTION OF MEN FOR THE ARMED FORCES[1]

MISS MARIAN McBEE

Executive Secretary, New York City Committee on Mental Hygiene of the State Charities Aid Association

AND

GEORGE S. STEVENSON, M.D.

Medical Director, National Committee for Mental Hygiene

The original program in Selective Service for psychiatric examination of men for military service provided that a neuropsychiatrist be a member of each Medical Advisory Board to examine all cases referred by local Selective Service boards for neuropsychiatric diagnosis and recommendations as to classification. In New York City some Medical Advisory Boards had specified hours for their work, while in others, the physicians saw registrants in their private offices by appointment. The psychiatrist usually had no background information on the registrant referred for psychiatric diagnosis and no facilities for gathering such data were provided by the Selective Service administration. Since in the psychiatric evaluation, the history of behavior is one of the most important factors, the Medical Advisory Board psychiatrists found themselves greatly handicapped in the efficient and effective discharge of their responsibilities.

At the request of Dr. Richard M. Brickner, a psychiatrist serving a Medical Advisory Board in New York City, and with the cooperation of Colonel Samuel J. Kopetzky, Medical Director of Selective Service in New York City, a special experiment of providing volunteer psychiatric social workers to aid the psychiatrist in this Medical Advisory Board was set up. The contribution of the psychiatric social worker consisted of preparing histories on cases referred for psychiatric diagnosis. An appointment was made by the clerk of the board for the registrant to be seen by the social worker. The case was cleared in the Social Service Exchange and health and welfare agencies' reports were obtained in identified cases. In this experiment it was possible to obtain information from community records to be used by the psychiatrist in making the diagnosis and recommendation for classification. The information so obtained did not become a permanent part of the registrant's Selective Service record. In cases in which the registrant was known to a private physician or a private hospital, waivers signed by the registrant, authorizing the release of information, were obtained. Of a total of 81 cases, 15 were identified by the Social Service Exchange as having been known to social and health agencies whose information would be helpful in the psychiatric classification. An additional 9 were identified as having been patients in state hospitals for the mentally ill.

The type of information secured from community records proved extremely helpful to the psychiatrist. One young man referred for study claimed that he was a conscientious objector. He was found to be known to several case work agencies and the report of one which gave information that he had been a client for several months, during which time he had become suspicious and antagonistic, and on one occasion had come to the office carrying a small bottle of liquid and had "put the cross of Moses on the door" was adequate background information for the psychiatric diagnosis.

When no available community record could be obtained through the clearance of cases in the Social Service Exchange, the psychiatric social worker interviewed the registrant and prepared a brief psychiatric social history, including statements as to the individual's

[1] Read at the ninety-eighth annual meeting of The American Psychiatric Association, Boston, Massachusetts, May 18-21, 1942.

education, employment, relationships with people, health and marital history. In cases in which employment records would be of help in the psychiatric evaluation the social worker obtained information from employers. The psychiatrists working at the Medical Advisory Board in which this experiment was set up reported that having social histories made their work both more accurate and more efficient.

Provision for psychometric examinations was made through the graduate departments of psychology of eight colleges and universities having qualified personnel to give psychometric examinations. Appointments were made through the office of the New York City Committee on Mental Hygiene and reports sent directly to the Medical Advisory Board.

A special plan for clearance of all cases classified potential 1-A, pending physical examination, in the state files has been developed. Local boards send the names of such registrants to the State Capitol where they are checked against the files of the State Department of Mental Hygiene and the State Department of Correction. Individuals identified as having been in institutions of either department are reported back to the local boards. Cases so identified were referred to the psychiatrists of Medical Advisory Boards for further investigation and reports from the institutions were obtained before classification.

Certain differences between the function of the psychiatric social worker in this work and in her usual job in a psychiatric agency should be noted. Histories obtained for purposes of psychiatric classification are necessarily briefer than a history prepared in anticipation of treatment. Because each psychiatrist had several men to examine in a two-hour period, a brief concise statement of salient facts in the individual case, was essential. In many instances, the histories consisted of verification of the registrant's statements, which, if true, were sufficient for classification.

The psychiatric social workers participating in this experiment have noted another difference between this work and that performed in a psychiatric clinical setting. This difference is found in the approach to the registrant. Partly because of the pressures of time, and partly because of the nature of the situation, there was more direct questioning of the registrants. In approaching material of obvious intense emotional significance to the registrant, the social workers soon found that the direct question was the best way to get the necessary information. Registrants were usually relieved to have the questions put to them and answered freely, somewhat to the surprise of the social workers.

A change in the Selective Service program which went into effect January 1, 1942, provided for only a superficial screening physical examination at local boards. The Medical Advisory Boards were no longer used for examination in questionable cases. In the psychiatric examination local boards were instructed that only cases of verified "idiocy, imbecility, epilepsy, and commitment to a mental hospital" could be classified as unfit for military service prior to examination at the induction center. A special directive from Selective Service headquarters, however, gave the following instructions:

> "(4) When the examining physician knows or learns of a history of mental disease in the family of the registrant or of social maladjustment, poor work record, or other mental or personality conditions of the registrant, which might cause the armed forces to ultimately reject the registrant, further information bearing on the personal and social history of the registrant shall be sought from local social agencies, school systems, state hospitals, and training schools for defectives, and the examining physician shall review the information thus received and shall enter an abstract thereof on the Report of Physician Examination (Form 221) under "Remarks" or on a memorandum attached thereto."

This directive is permissive for the psychiatric social workers' investigation but does not provide personnel to carry out the recommendations. Realizing that personnel for such procedure would have to be provided on a voluntary basis if it were to be included in the examination procedure, the New York City Committee on Mental Hygiene offered its services to the Medical Director of Selective Service in working out a program for better psychiatric examination procedure. The plan was discussed with the psychiatrists at the induction center and their interest in having full reports of available information

from the community was assured. The program involving the services of volunteer psychiatrists and psychiatric social workers was put into effect May 8, 1942.

The new program consists of having designated psychiatric social workers available to accept cases referred by a specified number of local boards. Each psychiatric social worker has received an identification card from Selective Service headquarters and her appointment, duties and responsibilities have been communicated to local boards. Since examining physicians at the local boards may disqualify individuals on the basis of verified commitment to a mental hospital, the directive recommends that cases known to have had hospital experiences with commitment be handled by the local boards.

The responsibility of the psychiatric social worker is to gather available data on cases referred for study, the first step in this process being clearance in the Social Service Exchange. Agencies registered on a registrant will be asked for information which might help in the psychiatric classification. When an individual is found to have had a recent psychiatric study, either at a clinic or hospital, without having been committed, a report of the examination will if possible be sent to the local boards whose responsibility it is to send such information on to the induction center. In cases on which there has been no psychiatric examination, the psychiatric social worker will prepare a social history. The usual procedure is for her first to interview the registrant, then relatives, employers or other sources of information as indicated. After completion of the social history an appointment is made for the registrant to be seen by the psychiatrist.

The psychiatrists participating in this program were consulted by the City Mental Hygiene Committee and their consent to serve in this capacity obtained. Selective Service then appointed them as local examining physicians. Some who had been serving in Medical Advisory Board capacities were reappointed as local board physicians, since Selective Service requires that all examinations prior to induction be by local board medical examiners. After completing the psychiatric examination, the psychiatrist sends the report to the local board where it is put into the registrant's record and goes to the induction center when the individual is called for his final examination. Although this plan is incomplete in not providing for thorough clearances of all cases classified 1-A, pending physical examination, it is a step toward a better psychiatric screening of men for military service in the Selective Service procedure. A broader plan which provides for a social case worker to be assigned to each local board, in order to aid in the many social problems presented by registrants and to contribute to the psychiatric screening, has been formulated but difficulties in its administration have prevented its being put into operation.

I should not like to leave the discussion of the rôle of the psychiatric social worker in the selection of men for the armed forces without mention of the fact that while Selective Service has provided for psychiatric screening, no similar program for enlisting men in the armed forces exists. Rather severe problems have come to our attention of men who have enlisted in the army or navy and have been discharged after a brief period of service because of an inaptitude for military service. Some of these discharged men present problems to community social agencies which might have been avoided had adequate psychiatric screening been made before the men were accepted for service.

Some of the problems which have come to the psychiatric social workers participating in the psychiatric selection of men for military service have further implications in terms of what happens to the individual rejected for service. One young man was so seriously disturbed and eager for psychiatric care that the social worker helped him to obtain hospital treatment as soon as his classification had been completed. The same young man came back to the social worker several months later, reporting that he had benefited by hospital treatment and was now back at his job and maintaining contact with the psychiatrist in the clinic.

The large problem of what happens to the psychiatric rejectees in the community has scarcely been touched. The newly formed joint Emergency Committee of Neuropsychiatric Societies of New York City has

undertaken to study the problem and plan consultation and treatment services for those men identified as psychiatric problems who are in need of and would benefit by psychiatric treatment. In this planning, psychiatric social work is an integral part of the program.

The number of psychiatric problems identified through the Selective Service procedure and the psychiatric discharges from military service present a special problem for community social and mental health agencies. Mental hygiene resources in most communities are usually overcrowded and, in times when civilian psychiatric staffs are being rapidly depleted, expanded treatment programs cannot easily be effected. However, the possibilities for study and constructive social planning in terms of known mental health problems, are a challenge to the professional personnel of mental health agencies and offer an opportunity for psychiatrists and psychiatric social workers to contribute both to the mental hygiene program of the community and to the special services in relation to the war effort.

TIME ELEMENT IN THE TREATMENT OF DRUG ADDICTION

M. J. PESCOR, M.D., LEXINGTON, KY.

How long should a drug addict remain hospitalized in order to derive maximum benefit from his treatment? That is one of the most controversial questions confronting the medical staff of the United States Public Health Service Hospital at Lexington, Kentucky. Naturally, the patients favor an early release. They see no valid reason for remaining in the hospital after withdrawal from drugs has been completed, which ordinarily can be accomplished in less than a month's time.

On the other hand, law enforcement agencies, courts and the majority of the public lean toward relatively long periods of treatment especially for those addicts who are prone to repeated relapses. Exasperated relatives, too, are glad to shed the responsibility of looking after their troublesome brethren judging by the number of letters received imploring the hospital authorities to keep the "black sheep" penned up as long as possible.

Most intolerant, however, are the pessimists who believe that the only cured addict is a dead one. In lieu of capital punishment they advocate permanent segregation or long term imprisonment not for its therapeutic effect, but for its deterrent effect upon others who might be tempted to use drugs.

Obviously the medical staff of the Lexington hospital endorses the earliest possible release consistent with the completion of rehabilitative measures. If the only requirements were withdrawal from narcotic drugs and the correction of remediable physical defects, the question of release would be no problem at all. However, the treatment of psychological dependence upon drugs must also receive consideration if future relapses are to be prevented. Psychotherapy is necessarily subjective in character and therefore it cannot be measured in terms of so many black and white pills every four hours for six days or six months as the case may be.

Lack of objective criteria has led to many an argument among the medical staff concerning the proper time for release of patients. Those who believe in prolonged treatment base their viewpoint on such premises as these:

1. Drug addicts who leave sanitaria after a month or less treatment almost invariably relapse to use of drugs. Obviously the effectiveness of longer periods of treatment should be tried.
2. Drug addicts neglect nutrition and health. Furthermore many of them become addicted because of physical illness. It may take months to study and correct these defects.
3. Drug addicts are badly in need of psychotherapy. It takes considerable time to administer such therapy even in its simpler forms.
4. Drug addicts are accustomed to resort to the use of drugs not only for the relief of painful or distressing experiences, but also to celebrate pleasurable occasions(1). These improper habit patterns must be replaced by healthier reactions to the ups and downs of life. To accomplish this addicted patients must remain in a controlled, drug free environment for many months.

On the other hand, those individuals who do not advocate prolonged treatment advance such arguments as the following to support their contention:

1. There is no concrete evidence that time is an important factor in treatment.
2. In the long run a man must reform himself. Forcing a patient to remain in an artificial environment will not appreciably change his habits of thought.
3. Hospital life removes temptation. The drug addict cannot use drugs in a hospital because there are no drugs to obtain. He must be resubjected to the stimuli of his external environment without relapsing to the use of drugs before the patient himself or the hospital authorities can be sure a cure has taken place.

4. Prolonged hospitalization accustoms certain patients to having someone else look after them, thus destroying initiative and independence. They are apt to look upon the hospital as a place of refuge from unpleasant extramural situations.
5. On the other hand, certain patients become embittered under prolonged treatment, thereby nullifying whatever good has been accomplished.
6. Each day spent in the sheltered environment of the hospital makes it that much harder for the released patient to readjust himself to his natural extramural environment.

For administrative reasons it was necessary for the medical staff to adopt some sort of policy about releases at the Lexington hospital. In the case of voluntary patients the matter was taken out of the hands of the medical staff when a Federal Court ruled that such patients could not be compelled to stay in the hospital even though they signed an agreement to remain under treatment for one year. The staff then decreed that voluntary patients should receive treatment for at least six months before they could be released as cured. However 85 per cent of these patients insist upon leaving prior to the expiration of the minimum time requirement.

In the case of prisoner patients the medical staff has a limited control over release. They must certify a prisoner as no longer an addict before he can apply for parole at the expiration of one-third of his sentence or before he can be discharged on conditional release at the expiration of two-thirds of his sentence. He must be released when his full term is completed regardless of the status of his addiction unless the patient himself chooses to remain as an ex-prisoner. In most instances prisoners have not been released on parole until they had served at least nine months of their sentences.

The medical staff has the greatest control over probationer patients, the only limitation being the duration of the probationary period which is fixed by the court. As one of the provisions of their probation, such patients must remain in the hospital until pronounced cured by the medical staff, the optimum period of treatment being arbitrarily fixed at nine months.

In other words custom has established six months as the minimum and nine months as the optimum period of treatment for drug addiction. There is some substantiation in fact for the minimum requirement. Drs. C. K. Himmelsbach and E. G. Williams who are on the research staff at the U. S. Public Health Service Hospital in Lexington, Ky., have carried on extensive clinical studies of drug addicts following withdrawal. These observations show conclusively that physical recovery from addiction is an irregular process requiring approximately six months for its completion(2).

If the time factor bears any relationship to the effectiveness of treatment, then follow-up data gathered on released patients should give some indication of the relationship. Follow-up procedures in use at the hospital are admittedly crude. The Federal Bureau of Investigation sends a report on any patients who have been arrested subsequently and whose finger prints have been sent to the Bureau for investigation. It is then possible to find out from the arresting authorities whether such patients have relapsed to the use of drugs. The status of patients discharged on parole or conditional release can be learned from their respective probation officers. As an additional but questionable source of information letters are sent out to all former patients every six months asking them whether or not they have relapsed, emphatically assuring them that the information will be kept confidential. If the patients fail to reply, letters are sent to their nearest relatives requesting similar information under similar assurances.

Employing these methods, contact was made with 403 of the 1036 patients admitted to the hospital during the fiscal year, July 1, 1936, to June 30, 1937, and their present addiction status ascertained. Contacts were established during a four-month period from July 1, 1941, to November 1, 1941, four to five years after admission. In order to have comparable data prisoners under treatment for fifteen months or longer were excluded from this investigation since none of the voluntary or probationer patients remained in the hospital longer than fourteen months.

The final selection, therefore, comprised 335 patients of whom 37.0 per cent were voluntary patients, 23.3 per cent probationers, and 39.7 per cent prisoners.

The present addiction status of these patients in relationship to the duration of treatment is shown in Table I.

The percentage differences in Table I were tested for statistical significance by the use of Schrek's nomogram(3). None of these differences was found to be statistically reliable. Under the circumstances it appears that the duration of treatment bears no significant relationship to the effectiveness of treatment. There are certain directional tendencies which suggest that the point of diminishing therapeutic returns in the case of voluntary patients is closer to three months than six and in the case of probationer patients closer to six months than nine. The prisoners, however, seem to do better under prolonged treatment, the optimum interval being twelve to fourteen months. These tendencies may be spurious since there is an inadequate representation of voluntary patients having six months' or more residence in the hospital and also an inadequate representation of prisoners and probationers having less than six months' residence.

The legal status of the patients makes very little difference in the eventual outcome of treatment although one would expect that the prospects for rehabilitation would be best for the voluntary patients and poorest for the prisoners. Of the voluntary patients in this study 18.6 per cent are still abstinent, 81.4 per cent have relapsed; of the probationers 21.8 per cent are still abstinent, 78.2 per cent have relapsed; of the prisoners 19.5 per cent are still abstinent, 80.5 per cent have relapsed; and of all three classes combined 19.7 per cent are still abstinent, 80.3 per cent have relapsed. In other words probationers seem to have the best chance for a cure and voluntary patients the poorest chance, but the percentage differences are not statistically significant.

Likewise the pre-release prognosis shows no statistically significant relationship to the present addiction status of the subjects in this investigation. Of the patients who are still abstinent 16.6 per cent were given a good prognosis, 45.5 per cent a guarded prognosis, and 37.9 per cent a poor prognosis; of those who have relapsed 9.7 per cent were given a good prognosis, 43.1 per cent a guarded prognosis, and 47.2 per cent a poor prognosis. Even if the differences were statistically significant, our study would still tend to show that prolonged treatment does not improve a poor prognosis.

One criticism of the present study is that it would have been more satisfactory to follow-up all the discharges for a given year rather than the admissions. That would permit the inclusion of prisoners with long sentences. The objection is valid, but the admissions for 1936-37 have been used in a previous study consequently there is more information available concerning these patients(4). Furthermore, the information is on statistical punched cards thus obviating a great deal of tedious searching through dead files and old records.

There is still another criticism, namely,

TABLE I

RELATIONSHIP OF DURATION OF TREATMENT TO EFFECTIVENESS OF TREATMENT BASED ON FOLLOW-UP OF 335 DRUG ADDICTS ADMITTED TO THE U. S. PUBLIC HEALTH SERVICE HOSPITAL, LEXINGTON, KY., FISCAL YEAR, 1936-37

Duration of treatment in months	Voluntary patients, 124		Probationer patients, 78		Prisoner patients, 133		Total patients, 335	
	Per cent abstinent	Per cent relapsed	Per cent abstinent	Per cent relapsed	Per cent abstinent	Per cent relapsed	Per cent abstinent	Per cent relapsed
Less than 3.....	69.6	58.4	0.0	0.0	0.0	0.0	24.2	21.9
3 to 5.....	17.4	12.9	0.0	0.0	0.0	0.0	6.1	4.8
6 to 8.....	8.7	21.8	23.6	6.6	0.0	3.7	9.1	11.2
9 to 11.....	0.0	5.9	58.8	73.7	42.3	42.1	31.8	35.7
12 to 14.....	4.3	1.0	17.6	19.7	57.7	54.2	28.8	26.4
Totals	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

the unequal distribution of cases. For example, the majority of the voluntary patients had less than three months' treatment, whereas the majority of probationer and prisoner patients had nine months' or more treatment. To obviate this it would be necessary to have full control over the release of patients so that a representative group could be released after one month's treatment, another after two months' treatment, and so on. This, of course, is not feasible because of existing legal and social restrictions. It might be applied in the case of probationer patients.

SUMMARY

1. Custom has established six months as the minimum and nine months as the ideal period of treatment for drug addicts admitted to the U. S. Public Health Service Hospital in Lexington, Ky.

2. The minimum standard has been justified, to a certain extent, by investigations carried on at the hospital which reveal that drug addicts do not regain complete physiological normality for approximately six months after withdrawal from drugs.

3. Follow-up studies made on 335 patients who were admitted to the hospital during the fiscal year, 1936-37, fail to show any statistically significant relationship between the duration of treatment and the efficacy of treatment.

BIBLIOGRAPHY

1. Kolb, Lawrence. The United States Public Health Service narcotic hospitals. Am. J. Med. Sc., 2: 100-103, Feb. 1939.

2. Himmelsbach, C. K. Clinical studies of drug addiction: physical dependence, withdrawal, and recovery. Not in print, but accepted for publication by Arch. Int. Med.

3. Schrek, Robert. A nomogram for determining the statistical significance of the probable error of differences of percentages. J. Lab. and Clin. Med., 25: 2, 180-184; Nov. 1939.

4. Pescor, Michael J. A statistical analysis of the clinical records of hospitalized drug addicts. Supplement 143 to the Public Health Reports, 1938.

WHAT UNEMPLOYMENT DOES TO PEOPLE

A Study in Adjustment to Crisis [1]

SOL WIENER GINSBURG, M.D., New York, N. Y.

Psychiatry, so long fettered to the insane asylum and preoccupied with the problems of disease and its alleviation, has only recently ventured to put its skills and techniques at the service of those concerned with the human being in his "normal" interests and ways of life. Cautiously, and rightly so, the psychiatrist has joined with the sociologist, the criminologist, the economist to explore fields of mutual interest and to attempt thus to study the human being in settings and faced with problems and tasks not uniquely involved in the questions of disease.

Psychiatry, itself a new discipline in the family of the sciences, has felt that it must surround itself with every safeguard in these trial testings of its knowledge in the borderline fields of human enterprise. The immediate application of the knowledge of individual behavior to that of the group by multiplication, as it were, is a thoroughly dangerous one that has led to much confusion and even to some nonsense. However it is certain that cautiously and tentatively applied, psychiatric insights can illuminate many human problems and at the same time, enrich its own more immediate spheres of interest.

Consider, for example, the lack of opportunity the psychiatrist and even the psychoanalyst has for the study of relatively normal, average people. Inevitably, the study of the sick person is enhanced by knowledge of the well-pathology by normal physiology. Only in the collaborative efforts of social scientist and psychiatrist can such experience be obtained.

Psychiatrists are constantly beset with the need more adequately to estimate the setting in which disease occurs; to evaluate factors of daily routine and adjustment antedating the apparent development of mental disease. A most important part of this world, it seemed to us, was the work a man did, the rewards it afforded him and his adjustments to the loss of work.

But perhaps even more in the field of the neuroses knowledge about the work-a-day world seemed scant and we hoped to learn substantially more of it. The neurotic is almost characteristically unhappy on his job or unable to keep one; disorganized in his quest for advancement and suitable enterprise: The phrase "neurotic work history" has become a commonplace. The psychotherapist, often called on to estimate the patient's own estimate of his job, his desires to "quit" and the rationalizations for this desire, and analogous problems, could perhaps, if only in a peripheral sense, also profit from studies of this sort.

It is in this hope that we may learn psychiatrically from research not strictly psychiatric that I venture to bring this communication to a group of psychiatrists, speaking to you as social scientists perhaps more than as clinicians.

Joining with an economist, a statistician and three psychiatrically trained social workers, under the auspices of the Columbia University Council for Research in the Social Sciences, we proposed to study the problem: what does unemployment do to people.

The methodology of the social scientist and the rigidly applied criteria of the economist and statistician, joined with psychiatric techniques have proven of much interest and productivity. This modified technique should prove useful in the study of similar problems, and as it is generally not known to workers in psychiatry, I describe it in some detail.

[1] Read at the ninety-eighth annual meeting of The American Psychiatric Association, Boston, Massachusetts, May 18-21, 1942.

This study was one part of a larger investigation on economics and group behavior. The staff was headed by Dr. Eli Ginzberg, of the Department of Economics, Columbia University, and consisted of Mrs. Ethel L. Ginsburg, Misses Dorothy L. Lynn, and Mildred Vickers and myself.

A complete report of this investigation is to be published by Harper and Brothers, under the title "What Unemployment Does to People"; Vol. I, Selected Cases; Vol. II, Analysis and Policy.

Of first importance is the construction of a sample; *i.e.*, a relatively small group of people representative of the larger whole to be studied. To construct a sample which would be valid and not so utterly heterogeneous as to permit no conclusions, certain basic eligibility requirements were set up.

Since unemployment entailed for some, loss of work and income and for others only loss of income, part of the sample was drawn from the Home Relief rôles (financial aid without work); the other from WPA (work relief). Three groups were chosen; Irish-Catholics, Jews and Anglo-Saxon Protestants, to test whether racial-cultural factors influenced adjustment to unemployment. It was believed, for instance, that to get any clear picture of what unemployment did to the negro would require a comprehensive study of the adjustment of the negro in community life—itself a vastly complex problem. We also excluded from the sample those families in which the head of the household was over fifty-five at the time of the study or severely handicapped for reemployment for physical or psychological reasons. The importance of this limitation is primary since to have included heads of families already known to be handicapped by emotional or mental illness would have invalidated our purpose: to study the effect of unemployment on "normal" people.

We are thoroughly aware of the risks involved in the use of such an ill defined term as "normal." We felt relatively safe however in including as normal those who had shown no overt signs of mental or emotional difficulty, who after some years of privation and hardship had not broken down into neurotic illness or deviate behavior. We also believed that the establishment of the requirement of whole families would tend to insure a certain basic adequacy, viewing divorce more often than not as an indication of emotional tensions within the family.

Included in the sample was a control group, in part composed of families who had previously been on relief but were now again self-supporting and in part of families of low income but who had never been on relief. Without this control group it would have been impossible to know whether our findings about the families on relief were truly the result of unemployment or were rather the result of other trends in the economy and the culture.

Two hundred and fifty families in all were studied, but the final sample consisted of 180 families. The 70 rejected cases were largely those of intermarriages which thus fell outside of the established criteria. The cases were studied in 1939-40. Of the 60 cases on Home Relief 26 had first come on relief before 1934, 23 between 1935 and 1938 and 11 after 1939. Of the 60 WPA cases, 33 had first received public assistance before 1934, 26 between 1935 and 1938 and one after 1939. The data in the records of these families in the District Offices of the Department of Welfare, WPA and N. Y. State Employment Service were carefully abstracted, and our staff subsequently had an opportunity to discuss each family with the Home Relief investigator or case supervisor to whom it was known. Social workers visited every family at home and had long interviews with the women and frequently the men. Incidentally, it ought to be mentioned that initial cooperation was obtained in all but one Home Relief and two WPA cases as the result of a simple letter setting forth our plan to study the problem of unemployment and requesting their cooperation, but in no way promising or suggesting any sort of reward.

In retrospect I have thought that this extraordinary response on the part of people of the most limited education and background was already a suggestion of their substantial integration, which the study was abundantly to confirm. At the same time the worker had an opportunity to observe the children and their relationship with their parents and siblings, and to talk with the older children. In addition, many of the men and older children were interviewed by the economist and myself.

We are quite aware of the fact that from a psychiatric point of view our material is entirely superficial, as any data obtained solely by the interview method must inevitably be. However, we think it strictly comparable to other psychiatric material obtained in interviews and much more complete than the material on which the psychiatrist is frequently asked to base an

opinion.[2] The amount and accuracy of the material is primarily a tribute to the skills of my social work colleagues.

For years, quite insidiously, we had been sold a concept of the unemployed. No group ever afforded so happy an opportunity for exploitation and derision, or so rich a source for bias and emotional distortion. The abundant WPA jokes, the callous cartoons, the insinuating editorial all reflected and helped create an utterly distorted picture of the unemployed man and his family.

What sort actually were the people who made up our material; whence had they come, what were their interests and ambitions, their sources of comfort and pleasure, their devotions and beliefs, their expectations for their children and their feelings toward their country.

Almost the first thing we did when we started our study was to clear all the cases through the Social Service Exchange. To our complete surprise no case was known to any welfare or assistance dispensing agency prior to the depression. At first glance this might be construed as a result of their ignorance or failure adequately to use the resources of the community. That this was not the case was demonstrated by their generous, if, to be sure, not always complete use of child health agencies, hospitals and the like. Rather, it proved a substantial piece of evidence of the essential self-sufficiency of these families and of their desire and ability to make a go strictly on their own. These were definitely not the chronic "charity" cases, the seekers of communal props for their individual inadequacies.

How had these people, whom the public had been asked to consider bums and failures, come to their plight originally? Only in 4 cases in the Home Relief sample did the men lose their jobs because of personal inadequacies which might be construed as blameworthy—the reason in the case of these four was drinking, to a psychiatrist surely itself a "sickness." Sixty per cent lost their jobs because of reduction in employment or their employers' bankruptcy; 15 per cent because of organic illness. In the WPA group, all but 8 lost their jobs because of the failure or decline of the business in which they were employed; only 2 because of illness and 6 for reasons for which they could in an ethical sense be thought responsible. Four of these 6 were discharged because of drinking. In the group formerly on relief who returned to private employment 27 of 30 had lost their jobs through the decline in their own or their employers' business. In brief, they were overwhelmingly the victims of the world-wide depression for which they surely bore no responsibility.

Of the families on Home Relief two thirds had had an average weekly income of $26-$40, 6 earned in excess of $40, and only 4 had not been self-maintaining. Of the WPA families ½ had had weekly incomes of $26-$40, ¼ over $40, and only ¼ less than $26. Eighteen of the 30 families who managed to leave relief had earned $26-$40, 9 earned more than $40, and only 3 earned less than $26. Recapitulating, this was a group of modest earners, but with few exceptions (4) quite independent and self-maintaining. The average salary of $26-$40, may be considered representative of the large bulk of the working population of New York City in the 1920's.

What did these people believe in before they were unemployed? All the Catholics and all but one of the Jews were reared in orthodox homes and the great majority had continued to observe the rituals of their religion. Only about ⅓ of the Protestant families had strong religious affiliations. However, only a few families were without some religious ties.

What of the political faiths of these people? It is important to emphasize the extreme averageness of these families politically: They were, as is consistent in New York City, overwhelmingly Democratic, with a scattering of Republicans and but 2 self-styled Communists.

As an index of their adjustment in reality various data are offered, all emphasizing the stability and integrity of these families before unemployment:

(1) Over ⅔ of these families had carried life insurance, both as protection and as sav-

[2] I have attempted in this communication to avoid speculations not warranted by the nature and scope of the material. I believe it is by just such speculations that harm is done to the attempts at collaboration between psychiatrist and social scientist.

ings. Many had both insurance and savings bank accounts, few had neither.

(2) Over ⅓ had shown considerable initiative and ingenuity in seeking and obtaining better paying jobs, or those offering what seemed to be better opportunities.

(3) They evinced a universal desire to have their children better themselves in the world of education and training. There were only 24 children in our study over the legal age for leaving school (17) and 9 of them were in school or college at understandable sacrifices to the parents. This also came out quite vividly in the constantly repeated contention of immigrant parents that they would never want to return to the "old country," not so much for their own as for their children's sakes: education here was free and training available and one might make something of himself.

The emotional implications of unemployment are many and profound. First: what is the import of the very act of being fired and losing one's job? Emotionally, the nearest counterpart to this experience is the loss of love the child suffers from a rejecting parent, especially a child who "has not done anything" to deserve it. In this connection, it will be recalled how few of these men lost their jobs for reasons which by any stretch of usage could be called their "fault." In our community the "boss" is for many men a very real parent (father) substitute—the person who provides him with the means for shelter and food, who protects him from various threats (loan-shark rackets for instance), to whom he can, ideally at least, go for advice and help and who looks after his future security. This was especially so for many of the men who had worked long, arduous years for one employer, to whom as well as to the job they had understandably formed real attachments. Many of these men had worked ten to twenty years at one job. Such loyalties and devotion are not easily severed.

Deprived of "love," the first reaction was essentially one of fear and bewilderment, combined with optimism, born of wishful thinking and obviously over-compensatory in nature. Where an objective estimate of the situation would have led in most instances to pessimism or at least profound scepticism, these men were almost invariably hopeful. They had worked through the "dizzy 20's" when work was abundant; unemployment was a new experience and one not easy to assay. For example: "Mr. C. went everywhere looking for work; he was sure he'd find something." "Mr. R. made the rounds of all the insurance companies" (he had previously been an insurance agent), "Mr. M. was sure unemployment was a temporary thing and that he soon would be able to locate work." "As far as Mrs. F. can remember, her husband's only reaction was to work harder, searching frantically for new orders."

Some of the families however, responded to this crisis and the implicit withdrawal of affection and security by fear and panic. They were ashamed and painfully aware of the possibility that they might have to resort to charity. "Mr. and Mrs. G. were greatly disturbed by Mr. G.'s loss of work. They had been so secure in their long established business, they did not know where to turn." "Mrs. B. said that their first and strongest feeling had been one of shame because in their opinion it was a disgrace for a man who had formerly had his own business to admit defeat."

It is defeat that most of these families found in their unemployment: defeat and a threat to their status in the community, their ambitions for themselves (however modest they were and assuredly they were scaled most modestly) and their hopes for their children. But few of them were conscious of such implications, especially early in their unemployment.

They proceeded as fast as they could to curtail their expenses, to borrow, to cash insurance policies (for these people the use of their insurance policies raised the terrifying threat of pauperization: the loss of burial money and a pauper's grave). It represented a real desire for independence, this willingness to sacrifice this protection, symbolic as well as real; to utilize savings, to draw on other members of the family: in brief, and, in sharp contrast to the popular notion, to do anything but go on relief.[8] Of

[8] A sample of a home relief allowance: for a family of father, mother and two children about $63 a month was provided. Rent was budgeted at $25.50, gas and electricity about $3, incidentals

the 60 men on Home Relief, 17 had been unemployed over six months before first applying for relief and 20 up to six months. Only 13 applied within a month after losing their jobs and these were the families where illness, marginal incomes, etc., had made savings virtually impossible.

They also proceeded to look for work. On the average the men looked constantly—in the face of difficulties almost impossible to imagine. Mr. — allowed himself ten cents a day on which to seek work; five cents took him all the way downtown, five cents bought him a bar of chocolate each day on his trek back to the Bronx, a distance of ten to twenty miles each day, rain or shine. Sixteen of these families succeeded in regaining a position of self-support for periods sufficient to permit them to come off relief and 20 succeeded in reducing more or less the Home Relief allowance by their earnings in private employment.

With the loss of job goes the great loss of prestige values, within and without one's home. No matter how humble the job, it had sufficed. In our civilization, work is what man lives by. We work to earn the necessities of life, to secure its comforts, to provide as befits a man for our families. It helps still the feelings of inferiority that unconsciously beset us; it gains us parity with our fellow and the acceptance of the community. It dignifies our daily life, no matter how humble. In it we may expend our aggressive impulses and ward off the profound feelings of insecurity and helplessness. With work man earns more than a stipend: he gains the right to be master in his home. For the unemployed man, all this is changed.

Perhaps the most pressing problem is the maintenance of his position in the home. Quickly the children become aware, and at an early age, of this change in status. One youngster flatly challenged his parents' authority, saying "you didn't take care of me, the relief did." The women are especially sensitive to this loss of prestige and authority on the part of the father and accurately sense its detrimental influence on the growing child. Over and over we found them trying artificially to pump up "dad" as the authority, to see to it that he did not lose his father rôle. Mothers encouraged the children to take their homework to father for help; to look to him for consent or denial of special privileges and otherwise to maintain the position which usually is the father's.

The baneful effects of this situation on the growing child needs no emphasis to a group of psychiatrists. Whatever discipline of psychodynamics we may adopt, we may safely agree on the necessity for an emotionally respected father ideal for the mental hygiene of the child.

For the man, life deteriorates into a sodden repetition of job seeking and lounging about the house. He no longer meets his fellow on the job and whatever limited cameraderie was his, no longer exists. Although the unemployed tend to congregate geographically in certain neighborhoods, each tries, if naively, to hide his handicap from his neighbors. So great is the feeling of shame for being on relief that 13 families had persisted in hiding their status even after years on relief, even to the extent of refusing to make use of surplus commodities which would at once have identified them as relief recipients. Many of the children refused to eat the hot lunches provided for them in school since this identified them as "reliefers." One rightly estimates such behavior as highly inadequate and neurotic; it also measures the profoundity of their shame. "You just aren't people any more on relief." "I worry all the time someone will find out; it's such a terrible disgrace." "This feeling of receiving charity is a bitter pill and makes you feel as if you were dead." "It is taking something for nothing." The nightly beer has lost its social value and needs to be taken on the rare occasions when it can be afforded away from accustomed haunts; the conversation no longer can be about the job, "prospects," the ball game. It risks contacts with other dissidents and expression of dissatisfaction.

At the start of the investigation the staff put the question: "what avenues of protest

(soap, toilet paper, etc.) at $1.50, leaving about $33 a month for food. Certain extras, such as additional clothing, occasionally could be made available, and there were surplus commodity depots to which they might go.

On work relief, a small additional sum was paid for clothing for the man and for his carfare to and from the job.

and compensatory outlet did I believe would be available to the unemployed man?" I postulated four: excessive irritability; political revolt, if but verbal and either to the right or left and the formation of protest groups; an increase in aggressive sexual demands; and deviate behavior of various aggressive types, including criminal behavior.

As if to illustrate the hazards of such more or less theoretically deduced conclusions,[4] the data did not substantiate these presumptions, with the possible exception of irritability and even here it was in the wives and not especially in the unemployed men that this was found.

The body of the unemployed is obviously fertile ground into which to implant protest against the symbol of authority: the state. To test the fermentation of such processes the men and women were queried about their politics, their attitudes to the relief set-up and to such organizations as the Workers' Alliance, etc. Those who see the unemployed as a breeding ground for left or right wing dissident groups would find small satisfaction in our material. Only 2 families read left wing newspapers, and 2 were active in the Workers' Alliance. The question will be raised as to how accurate such information is since a desire to conceal political radicalism would be understandable. We believe that the repeated interviews by various members of the staff and the highly scrutinizing attitudes of the workers of the Department of Public Welfare would have sufficed to reveal such movement had it existed. A more middle-of-the-way, average American group could not be found.

The unemployed man at home found his greatest outlet in taking over as many feminine responsibilities as possible, perhaps in expiation for a sense of guilt, perhaps as one of the very few ways available to him for justifying his existence. The men shopped (bargain hunting at a distance from home can be very important on relief budgets), washed, took care of the youngsters, etc. But largely they slinked about the house trying to keep from underfoot; to be as little obstruction in their idleness as possible, or "vanished" from the house for as long periods as possible without risking the investigator's "suspicion" that they were working.

Their attitudes to their wives reflected no aggressive overcompensation: here too they were without the capacity to revolt. We found bickering, petty irritation, complaints that the men were so constantly about as to preclude a normal management of the home, but little suggestion of aggressive demands by the man.

The only evidence of protest behavior which we found was in the religious behavior of our clients. Of the Catholic families, 5 who had not previously done so practiced birth control, but tried otherwise to remain within the fold, and 3 revolted all the way disowning entirely all religious observances. Three Jewish families, previously orthodox in their practices, ceased to conform. An estimate of this type of behavior is not easy: economic and other factors complicate the picture immensely.

Of crime there was but one instance and this had its obvious roots in the situation which prevailed before the man had become unemployed. There was no increase in drinking; perhaps, to the contrary some lessening, even in those whose drinking had previously involved them in difficulties.

We found a number of attempts to "cheat" on the investigators in petty ways and I believe this afforded them some slight ego gratification, of the kind a child gets from cheating teacher or pilfering his mother's purse of pennies. In addition some increase in their feelings of security probably resulted; having so little, any additional sum, no matter how trivial, could accomplish this, at least symbolically.

It appears definite that one need not fear "revolt" of the unemployed; perhaps it would be better had they greater capacity for protest. This is a group of quite thoroughly discouraged and defeated people, frightened and confused, and clutching only to hope for their children if not for themselves.

We need not concern ourselves here with the economics of work relief: as a mental hygiene device it is unimpeachable. From the psychiatrist's point of view, the defects in work relief are many: the jobs are too frequently entirely unrelated to a man's

[4] In this connection see Schmideberg, Zum Verständnis massenpsychologischer Erscheinungen, Imago, 21, 445.

previous skills or interests; the incentive of reward for a job well done is too little; the community stigmatization of WPA too great a burden; the disciplines of the job too often lax and partisan. But it at least enables a man to work—to get out of the house in the morning to go to the job, to return, perhaps fortunately tired and grimy, having justified one's existence through one's own efforts and to have again the feeling that one is master in one's home. The pressing need to work is satisfied and, whatever their grumbling, the men acknowledge their gratefulness for this: "Mr. M. likes to work and believes that despite the fact some people take advantage of WPA, the majority of the men want to earn their way." "In the opinion of both Mr. and Mrs. B. WPA is a wonderful thing in that it has given him a chance to work and not to feel he is receiving charity."

Singer [5] in his monograph "Unemployment and the Unemployed" has emphasized the common routine which work enforces on all people who take part in it.

> "They get up at the same hour, they have their meals at the same time and in the same way, they are doing the same sort of job all day long, they develop an interest in the same topics as the other people in the firm, such as the prospects of the trade, wages, working conditions, hours. . . . . Their very thoughts, ideas, behavior, way of dressing, the words they use are molded into a common pattern, very often without their knowing it."

This routine vanishes with unemployment; and the freedom from the routine becomes a curse. It is a freedom conditioned by poverty, which limits every activity: "we only listen to the radio at night; the electric bills are too high to listen in the daytime." "Yes, we might visit a friend or relative, but look at our clothes and then they'd expect to visit us and we'd have to offer them something and we haven't any decent dishes any more."

But unemployment is not just a vacuum state, one of mere waiting about for a new job. The day must be filled: men are not beef that can be put in the refrigerator and kept fresh until needed. Attitudes are formed, bitterness and disillusionment fostered, skills lost, self-discipline relaxed, habits of neatness and punctuality and ability to work with one's fellow dissipated. And over all is developed a protective layer of "not-thinking," of refusal to contemplate one's problems or the awfulness of one's plight: an anesthetic to deaden one's pains.

Obviously, this is a most unhealthy mental state, both for the individual, his family and the community. Work relief, whatever its defects, supplies some of the accoutrements of working and at least challenges the decay of men.

The unemployed man, traumatized by the loss of his job, and, in a lesser way, constantly rejected and put on by "authority" (refusals of requests for clothes, the unending intrusion on his privacy by the investigators, the atmosphere of suspicion about irregular earnings, etc.) comes to still further defensive anxieties. He is increasingly afraid to tackle a new job: maybe he has lost his skills, he has no decent clothes and looks so shabby that he is certain he will be turned away on that account, he needs a haircut and can't afford it; he has been turned away so often before he even had a chance to ask; what will be the attitude of his fellow workmen, and worst of all, perhaps he will again be fired. All these fears mount with the passing of time: unchallenged they threaten complete withdrawal to the group of permanently unemployed. Whatever it lacks, work relief at least, offers some of that challenge.

A most important aspect of our problem, one that presses on the younger unemployed man and his wife is the question whether or not they should have a family. Religious practices and economics for the moment aside, the limitation on the size of the family poses restrictions, which are certainly not emotionally healthy for the individual.

A number of families did have children after they had come on relief: 14 Catholic, 5 Protestant and 1 Jewish family. It must be remembered that in addition to their religious objections to birth control, the Catholics were a younger group. All the Protestant and the Jewish family had children only after a return to private employment had raised expectations of their renewed independence; hopes which proved premature.

An aspect of this question of interest to us as psychiatrists is the authorities' refusal

[5] Singer: Unemployment and the Unemployed; Chemical Publishing Co., 1940.

to contemplate it at all officially. No allowance is made in the budget for contraceptives, leading in most instances to the use of abstinence or withdrawal as contraceptive methods. Relatively few women knew how to get help from contraceptive clinics, and at least in New York, the investigators of the Department of Welfare were expected to avoid suggesting the use of such resources. Condoms represented a luxury beyond the reach of the unemployed.

A further handicap to normal sexual functioning is imposed by the housing conditions. In 30 of the 60 Home Relief cases serious overcrowding existed, allowing the adults little if any privacy. This, in turn, raised the problem of the exposure of growing children to parental intercourse; many of our parents sensed the problem and made every effort to prevent such episodes. The housing available made this a problem of restraint and no little ingenuity.

There are many more aspects of the problem of the unemployed: we have attempted to suggest but a few.

What, after years of unemployment, was the attitude of these people to the future? Six didn't want to think of it at all, it was too painful; 5 didn't want to talk about it, although they discussed other matters freely; 17 were fairly optimistic about getting back into private employment, 18 were undecided (really afraid to hope) and 25 were pessimistic. For their children, 18 were optimistic, 33 uneasy and worried, 5 pessimistic.

These were attitudes tested in 1940. A war has altered much of the world in which these people then lived: unquestionably most of them are today economically more secure than they had any reason then to anticipate.

But the lesson of the unemployed is none the less important. Already individuals and government agencies preoccupied with post-war planning, are concerning themselves with the problems of unemployment. Perhaps we may hope that as the results of such studies as this, the human values may be more suitably emphasized so that the waste and frustration of human resources may at least be minimized in the management of the victims of the apparently inevitable economic crises.

We came to the end of this study impressed that a group from the beginning underprivileged, faced with an acute and extreme crisis, could make so adequate an adjustment, calling on all their human reserve and resources. We felt, as did Anna Freud after watching the bombed-out British: "We have seen plenty of evil in the world, but one can have only respect and admiration for human beings."

SYMMETRICAL BILATERAL GRANULAR ATROPHY OF THE CEREBRAL CORTEX OF VASCULAR ORIGIN

A Clinico-Pathologic Study [1]

ANDREW J. AKELAITIS, M. D., Rochester, N. Y.

Over a period of more than fifty years sporadic cases of a symmetrical atrophy of the brain have been described in medical literature. This atrophy has been described as cauliflower-like puckering, cirrhosis, verruccose and granular. Pozzi(1) was among the first to describe this condition. In this country Blackburn(2), Meyer(3, 4) have reported cases. In recent years Spatz(5) and his coworkers, Pentschew(6) and Lindenberg(7) have reviewed the literature and reported new cases. They believe that this granular type of cerebral atrophy results from an obliterating form of endarteritis.

The present case is reported for three reasons. First, in order to bring attention to a condition which has apparently received little study in the past. Second, to stress the unique distribution of the atrophy which is more or less limited, topographically, to those portions of the cerebral cortex and subcortical nuclear masses which lie at the juncture of vacsular supply of the three main arterial systems, namely, the anterior, the middle and the posterior cerebral arteries. Third, to emphasize the involvement of the gray matter in contrast to Binswanger's chronic subcortical encephalopathy in which the involvement is limited primarily to the white matter. This latter differentiation can probably best be explained on the basis of the vascular architecture of the brain.

Case Report

A. K., a semi-stuporous, white bachelor, aged 32, was admitted to the Rochester Municipal Hospital, October 26, 1939, with bronchopneumonia and died November 4. The history was obtained from relatives and the family physician, Dr. S. Sukovanchenko.

Family History.—Was not remarkable.

Personal History.—Birth and development up to the age of 7 was normal. Due to mental retardation and speech difficulty, school progress was slow and he left school while in the sixth grade at 16. Sexual development was retarded. His vocational adjustment was interesting. After leaving school he worked as a stock-room clerk for 8 years and subsequently as a maintenance man in a textile factory until 1938. He was considered dull and slow but was steady and well-liked. The family protected him constantly. He did not smoke or drink alcoholic beverages.

Personality.—He was a childish, affable and sociable individual. His fund of gossip which he enjoyed giving out gave him a certain prominence in the neighborhood.

Present Illness.—At the age of 7 he suddenly developed a quadriplegia, twitching of the mouth and aphasia. A hypertension was found at this time. The quadriplegia and aphasia cleared in two weeks. Since then, however, he has stuttered. Occasional urinary incontinence prevailed throughout life. Up to the age of 14 he was very dull mentally according to Dr. S. From the age of 14-30 years he apparently got along well, worked regularly and required no medical care. Although his employers found his work satisfactory he was never promoted. He bought an automobile with his savings but never learned to drive.

At 30, two years before death, he was found unconscious on the street. Upon regaining consciousness a right hemiplegia and aphasia were noticed. Two days later he was able to speak and visited Dr. S. at his office. Albuminuria and a blood pressure of 240 mm. Hg. systolic and 120 mm. Hg. diastolic were found. He never returned to work after this episode. He became careless in his dress and personal habits. His speech became almost unintelligible, he was unable to read but could write and showed no difficulty in making change. His memory for recent and remote events was fair. Voluntary activity became awkward and his gait was spastic and ataxic. The family observed short spells of staring with uncommunicativeness (petit-mal?) but no history of grand-mal seizures could be obtained. In February, 1939 he was seen by Dr. G. Kirby Collier. Neurological examination disclosed an internal strabismus, involuntary movements in the upper extremities, spasticity in all extremities, exaggerated but equal tendon reflexes, swaying in Romberg and a shuffling propulsive gait.

One week before admission he developed a cough with fever.

Physical Status.—The patient was well-developed

[1] Read at the ninety-eighth annual meeting of The American Psychiatric Association, Boston, Massachusetts, May 18-21, 1942.

From the Department of Medicine, Division of Psychiatry, University of Rochester School of Medicine and Dentistry, and the Clinics of the Strong Memorial and Rochester Municipal Hospitals.

and well-nourished, acutely ill and drowsy. The temperature was 39.5 deg. C., respirations 56 per minute and the pulse 128 per minute. The systolic blood pressure was 230 mm. Hg., and the diastolic 110 mm. Hg. Signs of bronchopneumonia were found in the chest. The heart was markedly enlarged to the left and occasional extra-systoles were present.

Neurological Status.—The hands were claw-like in appearance and the extremities spastic. An exudate was found in the right fundus but the arteries in both fundi did not appear sclerotic. The deep reflexes were greatly exaggerated, ankle clonus was elicited bilaterally, and the Hoffman and Babinski signs were positive bilaterally.

Psychiatric Status.—He was usually unresponsive and when he talked his speech was slurred and almost incoherent. Dr. S found him to be correctly oriented and the patient expressed appreciation of his help in the past.

Laboratory Studies.—Examination of blood revealed 16,800 white cells with 90 per cent neutrophils. The blood Wassermann and Kahn reactions were negative. Blood chemistry studies revealed the following: NPN 55 mgs. per cent, serum albumin 3.2 mg. per cent, serum globulin 3.1 mg. per cent, uric acid 4.1 mg. per cent, chlorides 578 mg. per cent, calcium 8.3 mg. per cent, phosphorus 3.3 mg. per cent, and CO_2 combining power 49 volumes per cent. Examination of urine revealed a specific gravity of 1.015, albumin 3 plus, and 5-10 granular casts per high power field in the centrifuged specimen. X-rays of the chest revealed a diffuse bronchopneumonia, a left ventricular hypertrophy and an enlargement in the region of the aortic arch consistent with hypertension.

Course.—In view of the urinary findings associated with the hypertension, sulfapyridine was contraindicated and since pneumococci could not be isolated, no serum was given. The patient's temperature remained elevated between 38 deg. and 40 deg. C., and the respirations varied between 40 and 74 per minute. The systolic blood pressure fluctuated between 160 and 210 mm. Hg. and the diastolic between 110 and 148 mm. Hg. His course was steadily downhill and he died November 4, 1939.

Pathological Anatomy.—The autopsy was performed by Dr. Richard A. Warrick two hours after death. Examination of the internal organs revealed cardiac hypertrophy and dilatation, acute vegetative endocarditis with mural thrombi in the right auricle and left ventricle, multiple pulmonary and kidney infarcts, myocardial scarring and a chronic mitral endocarditis, bronchopneumonia and acute bronchitis. The larger arteries such as the aorta and coronary vessels showed a minimal amount of atheromatous changes, but the medium-sized arterioles in the kidney, spleen and pancreas showed varying degrees of narrowing of the lumen with hyalinization of the media and hyperplasia of the intimal linings. Histologically the kidneys revealed discrete cicatricial scars in the cortex. The kidneys were of normal size and the capsule stripped off easily. The surface of the kidneys showed a slight granular appearance.

Macroscopic Examination of Central Nervous System.—The brain weighed 1120 grams. The dura and leptomeninges were normal in appearance. The basilar and vertebral arteries showed marked atheromatous changes (Fig. 11). Over the convexities of the cortex bilaterally in the regions of the atrophic convolutions the small arteries were white, very firm and twisted in shape (Fig. 1). The veins were tortuous and deeply engorged over these regions and appeared more abundant than normal. Upon removal of the leptomeninges the atrophic convolutions were very firm in consistency. Their appearance may be described as granular or verrucose and resembled the surface of a cauliflower. The extent of this symmetrical atrophy was more or less limited over the convexity to the second frontal convolution, the pre-Rolandic convolution, the superior parietal lobe, and the second and third temporal convolutions which began abruptly about 3 cm. from the temporal pole and extended backwards into the parieto-occipital lobes where the atrophy was most extreme (Fig. 2). The supramarginal and angular gyri on the right side were relatively normal in appearance. On the left side a cystic area of softening with blood pigmentation was seen anterior to the supramarginal gyrus (Fig. 1). On the mesial surface the atrophy was extreme in the praecuneus and the corpus callosum was quite thin especially in the posterior half of the genu, the body and the anterior half of the splenium (Fig. 3). Over the basilar surface the orbital gyri were slightly atrophied in their anterior and lateral portions. The right hemisphere was cut sagittally and softenings in the head of the caudate nucleus and putamen were found (Fig. 4). The left hemisphere was cut transversely and similar areas of softenings were found in the head of the caudate nucleus and putamen. The cerebellum was slightly smaller than normal and discrete areas of a verrucose atrophy were symmetrically present over the lobulus ansiformis and to a less extent, the lobulus simplex. Upon section, a small cyst with blood pigments was found in the left lateral portion of the superior vermis. A small orange pigmented area about 1 mm. in diameter was present in the left pons. The hindbrain was small and the pyramidal tracts were almost completely dissevered from the rest of the medulla oblongata in its posterior portion. The spinal cord appeared normal.

Microscopic Examination of Central Nervous System

The Cerebral Cortex.—Two distinctive types of lesions were found. The first type only occurred in the left parietal region in the vicinity of the supramarginal gyrus. This was a typical cystic area of softening with a rich overgrowth of glia and connective tissue: the sort of lesion described as "état vermoulu" by Dougherty (8).

The second type was found throughout those areas of the cortex which showed a verrucose or granular atrophy. The leptomeninges were only slightly thickened and contained no hematogeneous or phagocytic cells. The small pial arteries showed

marked thickening of the endothelial lining (Fig. 5) with partial destruction of the elastic membrane and hyalinization of the walls. Frequently the lumen were almost completely occluded with thrombi (Fig. 6). Thionin stains revealed numerous discrete areas, usually perpendicular to the surface of the gyrus, in which nerve-cells were absent and glial nuclei increased in number (Fig. 7). In the Mallory phosphotungstic acid stain these areas devoid of nerve cells were found to be abundant in glial fibrils and connective tissue fibers. Fig. 8 shows rather well the glial scars which have resulted in indentations of the surface of the cortex resulting in the macroscopic appearance of a cauliflower-like atrophy. In hæmatoxylin-eosin and Van Gieson stains completely occluded arterioles were seen in these areas of gliosis (Fig. 9). These glial scars rarely extend into the region of the arcuate fibers but usually involve the upper four cortical layers. Usually they are vertical but occasionally horizontal scars occur (Figs. 7 and 8). In Perdrau stains, reticular and fibrous tissue was abundant in the glial scars and walls of the obliterated arterioles.

The medullary layer, including the arcuate fibers, was relatively intact as studied in myelin sheath stains. Some loss of myelin was found subadjacent to the markedly atrophic cortices but this was probably a result of secondary degeneration

The Internal Nuclear Masses.—The globi pallidi, the claustrii, the thalami, hypothalamus, hippocampi and amydaloid nuclei showed no changes. In the head of the caudate and throughout the anterior portions of the putamen small discrete areas of softening were found throughout. Many arterioles were found completely occluded and the parenchyma replaced by abundant glial and connective tissue fibers. The surprising feature of the histological changes is that while the nerve cells are completely destroyed, the bundles of myelinated fibers in the scarred areas are relatively intact (Fig. 10).

Cerebellum.—A typical area of softening with cyst-formation and pigmentation with hemosiderin granules was found in the left lateral portion of the superior vermis. The histological changes in the verrucose atrophic areas of the cerebellar cortex were similar to those described in the cerebral cortex. The cerebellar nuclei were normal in appearance.

Midbrain.—Except for an area of recent softening in the left pons, essentially normal histological findings were seen.

Hindbrain.—Bilateral paling of the pyramidal tracts was observed in myelin stains. The large arteries, especially the vertebral and basilar arteries, showed extreme atheromatous changes in their walls (Fig. 11). Within the parenchyma, however, the vessel walls did not appear thickened, and the nerve-cells of the cranial nerve nuclei and inferior olives were well-preserved.

Spinal Cord.—Except for paling of the pyramidal tracts bilaterally, the histological picture was not remarkable.

Discussion

The distortion of the posterior portion of the medulla oblongata would, alone, suggest a developmental anomaly of the central nervous system. It is probable that this structural change was a result of pressure by the excessively atheromatous arteries at the base of the brain. The convolutional pattern of the brain, the subcortical nuclear masses and the cerebellum were normal and these findings, I believe, differentiate the present case from those congenital atrophies described by Bresler(9).

Clinical Picture.—The illness began abruptly at the age of 7 with the development of a transitory quadriplegia and aphasia. In the fourteen cases collected by Lindenberg(7) the age of onset was between 30 and 70 years and in one-half of the group symptoms developed after the age of 50. It is interesting to note that hypertension was discovered at this time. This association has been observed by previous investigators especially Greenfield(9). Pentschew(6) stressed the frequent association of hypertension and contracted kidneys in the cases of symmetrical granular atrophy of the cerebral cortex which he collected from the literature. The occurrence of granular kidneys, arteriolar sclerosis, cardiac hypertrophy, hypertension and a slowly progressive course in our patient would suggest that we were dealing with essential hypertension. Although the patient rapidly improved, difficulty in speech and mental retardation remained. The rather remarkable feature in the course of his illness is the long remission of twenty-three years during which time he attended school and was able subsequently to be profitably and regularly employed at menial tasks. The vascular accident, two years before death, probably produced the softening in the left parietal lobe. From this time, mental deterioration and the progressive development of a quadriplegia was rapid. Speech became almost incomprehensible. Periods of staring with uncommunicativeness and confusion became increasingly frequent toward the end. According to Lindenberg, sudden fleeting cerebral manifestations in the form of confusional states, attacks of dizziness and headaches with a slow development of personality changes suggestive of

organic defects of the brain are among the indefinite signs in the course of the symmetrical granular atrophies. Transient focal symptoms such as hemiplegias and aphasias are occasionally seen. Previous investigators such as Pozzi(1), Blackburn(2), Meyer(3), Prout(11), and Leri(12) observed convulsive disorders in their cases. Generalized convulsions were not observed in this case. The course is variable, Lindenberg says it may extend more than ten years, in the present case the illness probably lasted twenty-five years. Thus it is apparent that there are no clinical signs or symptoms pathognomonic of this condition. It is possible that encephalograms, arteriograms and biopsies may help to make the diagnosis during life.

Pathology.—The most striking feature of the symmetrical cerebral atrophy is its topographic distribution. For the most part, but not entirely, the atrophy occurs at the juncture of the blood supply of the terminal branches of the three main arterial systems of the cerebrum. The atrophy is only slightly evident over the orbital gyri of the frontal lobe at the juncture of the anterior and middle cerebral arteries; more marked over the second frontal convolutions, the area of juncture of the anterior and middle cerebral arteries; quite marked over the second and third temporal convolutions which is supplied by the terminal branches of the middle and posterior cerebral arteries; and the most extreme atrophy occurs over the parieto-occipital region which is at the juncture of supply of the terminals of all three cerebral arteries, the anterior, middle and posterior. On the mesial aspect the atrophy is most marked in the posterior portion of the praecuneus, *i.e.*, at the juncture of the nutritional supply of the anterior and posterior cerebral arteries. Only slight atrophy is found over the upper portions of the anterior and posterior central gyri and the superior parietal lobule at the juncture of the middle and anterior cerebral arteries. The atrophy of the inferior portions of the anterior central convolutions would suggest that similar changes can occur in those regions not situated at the juncture of the terminals of the main cerebral arteries.

This peculiar topographic distribution holds for the atrophy in the nuclear masses of the cerebral hemispheres. This atrophy is most marked in the head of the caudate nucleus and the putamen which is at the juncture of the blood supply of the terminal branches of the anterior and middle cerebral arteries. The remarkable feature is that those areas of the medullary substance at the juncture of supply of the terminal branches of the anterior and middle, middle and posterior and anterior and posterior arteries are not involved in this process of softening or atrophy.

The symmetrical atrophy of the cerebellar hemispheres is relatively slight but again it is limited, topographically, to that region which roughly forms the juncture of the terminal branches of the superior cerebellar artery with the anterior and posterior inferior cerebellar arteries.

It is highly probable that this distribution is most readily attributable to the fact that since the process is occurring simultaneously in the terminal branches of the main arterial systems, no opportunity arises for collateral circulation to be established.

In the left parietal lobe, the left side of the pons and superior vermis on the left side are found typical areas of softenings of different ages produced by a more or less acute vascular insult. However, the areas of minute discrete glial scarring resulting in the granular verrucose atrophy is a result of a slowly progressive narrowing or occlusion of the lumen of the cortical arterioles. In this process, we are probably dealing with changes which are so slow that the astrocytes are not destroyed but because of the chronic anoxemia are actually stimulated to hypertrophy and hyperplasia. Nissl observed that small destruction of brain parenchyma could be completely replaced by glia. Alzheimer(13) described this type of atrophy as peri-vascular gliosis occurring on an arteriosclerotic basis, and Spielmeyer(14) has observed a similar process in syphilitic diseases of the cerebral arteries. This condition leading to granular atrophy is in contrast to the spongy state of the cortex and lenticular nuclei which may occur in the senile dementias, Pick's disease, Wilson's disease, spastic pseudosclerosis of Creutzfeld and Jakob, encephalitis, and general paresis. In status spongiosus the parenchymal damage is probably so acute that the supporting

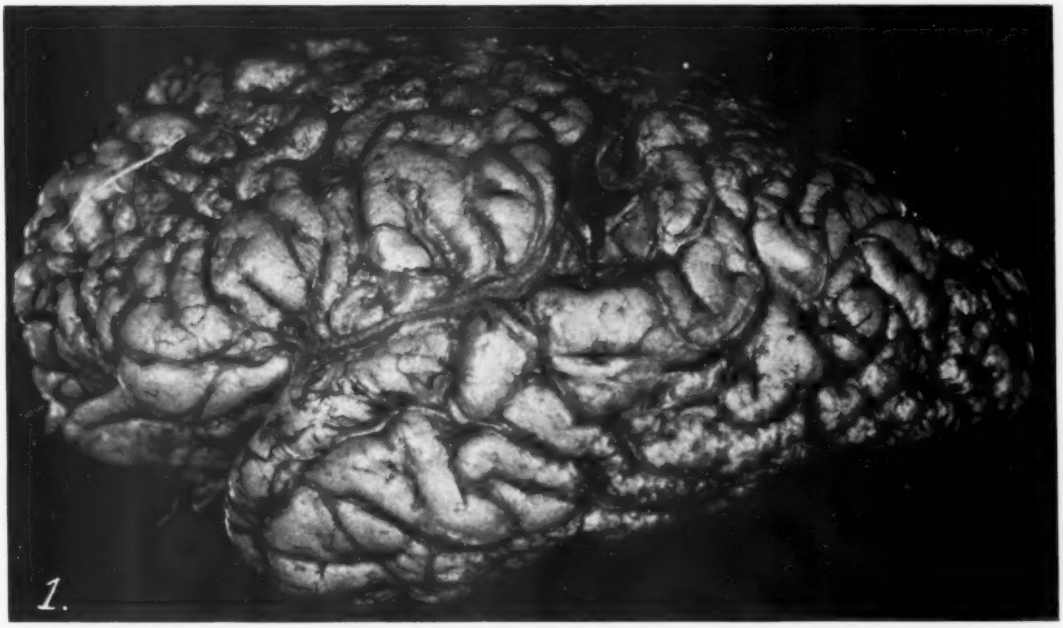


FIG. 1.—Lateral view of the left cerebral hemisphere with leptomeninges attached. An old cystic area of softening is present in the parietal lobe. The arteries appear white and glistening and the smaller vessels are tortuous and appear like cords. The veins are tortuous and increased in number especially over the areas of atrophy.

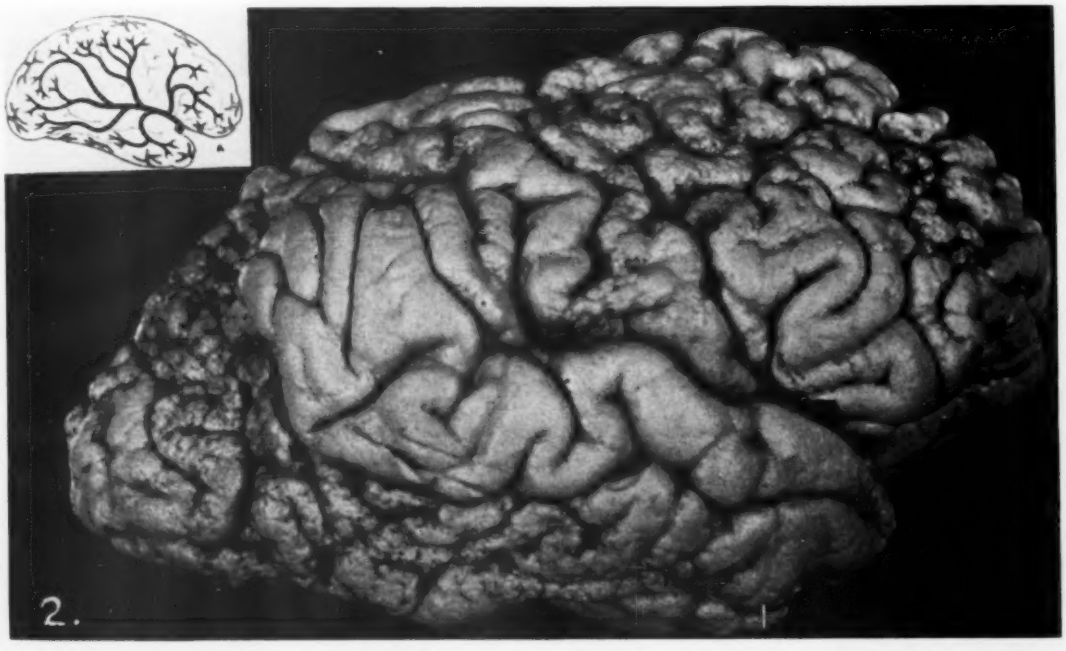


FIG. 2.—Lateral view of the right cerebral hemisphere with leptomeninges removed. Observe the distribution of the atrophy to those areas which are at juncture of the terminal branches of the three main arterial systems.

The drawing of the arterial supply is from Globus, J. H.: Neuroanatomy. For legend see Fig. 3.

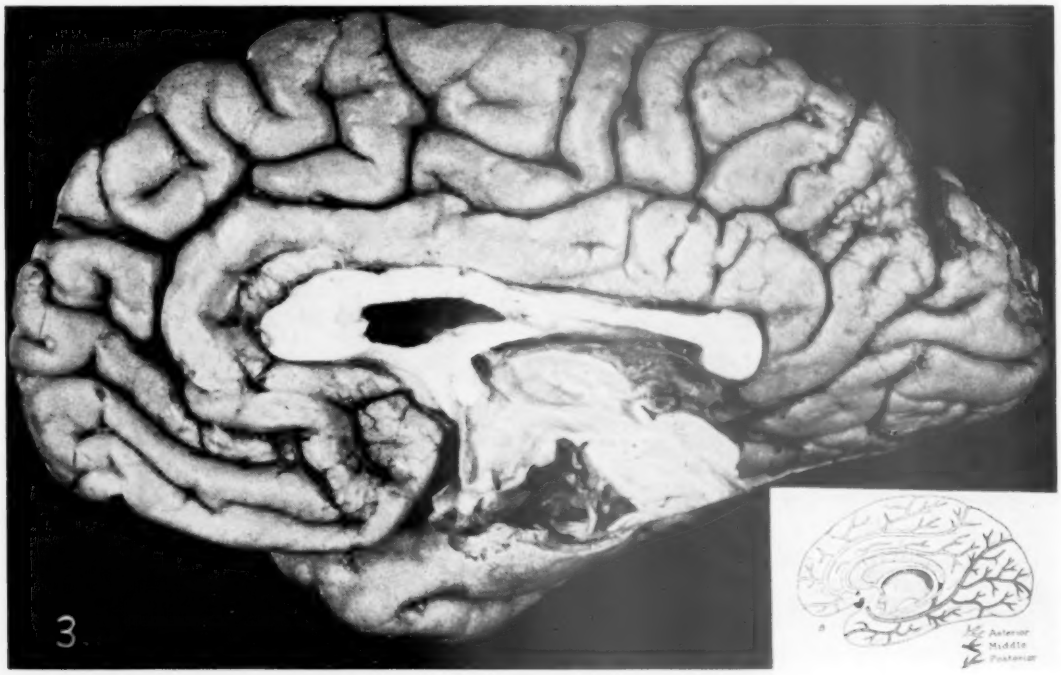


FIG. 3.—Mesial view of the right cerebral hemisphere. The cortical atrophy is most pronounced in the praecuneus, the juncture at which the terminal branches of the anterior and posterior cerebral arteries meet.

The drawing of the arterial supply is from Globus J. H.: Neuroanatomy.

FIG. 4.—Sagittal section through the right cerebral hemisphere showing the cortical atrophy and discrete areas of softenings in the head of the caudate nucleus and to a less extent in the putamen. The rule in centimeter scale applies to Figs. 1, 2, 3 and 4.

FIG. 6.—Thrombosed pial artery over the second temporal convolution of the left hemisphere. The lumen is almost completely occluded by a well organized thrombus. The walls of the vessel are hypertrophied. Hæmatoxylin-eosin stain ×-100.

FIG. 5.—Pial arteriole over the second frontal convolution of the left hemisphere. The lumen is very much narrowed as a result of the endothelial hyperplasia. In the rarified tissue internal to the elastic membrane hyaline is present. The internal elastic membrane is partially disrupted. The adventia is made up in part of rarified connective tissue. Hæmatoxylin-eosin stain ×-400.

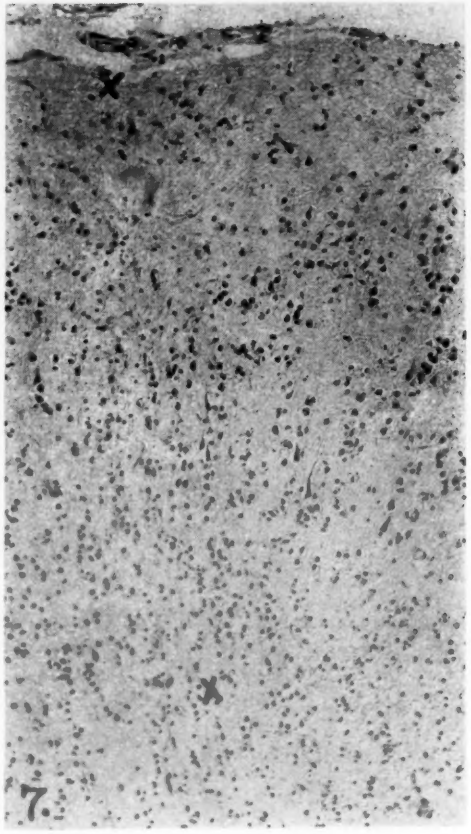


FIG. 7.—Photomicrograph from the left parieto-occipital region. A narrow area, perpendicular to the cortex extends throughout all six cortical layers (X-X). The nerve cells are absent and the area is rich in glial elements. Thionin X-100.

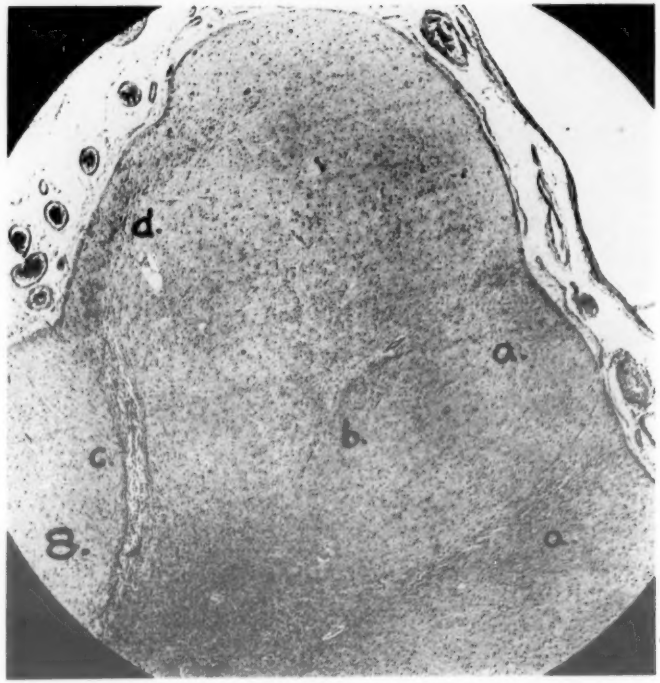


FIG. 8.—Photomicrograph from the left parietal occipital region to illustrate the histology of the process of the verrucose or granular atrophy. At "a" and "c" are three glial scars extending perpendicularly from the surface for variable lengths into the cortex. At "b" is a scar deep in the cortex. At "d" is a horizontal scar in the upper portion of the cortex. Phosphotungstic acid stain X-30.

FIG. 10.—Photomicrograph from the head of the caudate nucleus of left side. The arteriole is completely obliterated with a well-organized thrombus. Nerve-cells are completely absent but the bundles of myelinated fibers are, relatively, well preserved. The gray parenchyma is completely replaced by a loose glial network. Phosphotungstic acid stain ×-100.

FIG. 9.—Photomicrograph from the left middle frontal convolution to show three completely occluded pial arterioles entering the parenchyma. Hæmatoxylin-eosin stain ×-400.

FIG. 11.—Brain-stem viewed from below to show the excessive arteriosclerosis of the basilar and vertebral arteries. The arteries over the cerebellar hemispheres are white and glistening. A slight degree of verrucose atrophy of the right cerebellar cortex is evident. Natural size. NB.

structures cannot keep up their coherent patterns of reaction with the result that the interstitial tissue is unable to produce a compact, dense fibrous gliosis.

The gray matter is primarily and almost exclusively involved in this condition. This is in direct contrast to Binswanger's chronic subcortical encephalopathy in which the extensive areas of demyelinization are limited to the medullary layer with sparing of the cortex and arcuate fibers. In this latter condition the blood vessels in the white matter usually show thickening of the intima with narrowing or obliteration of the lumen. The question naturally arises as to whether those regions in the medullary layer which lie at the juncture of the terminal branches of the anterior, middle and posterior cerebral arteries are chiefly affected? Unfortunately, I have not had the opportunity to study such a case personally and the descriptions given by previous investigators are not sufficiently detailed to settle this point.

The pathogenesis of these two conditions is probably best explained on the vascular architecture of the brain. Duret(15) classified the pial arteries entering the gyri into cortical and medullary types. Freedom(16), using the Biondi technique, found that the superficial layers of the cortex receive blood from short, purely cortical arterioles while the deeper layers receive their blood supply from the medullary arteries. Campbell(17) using vital injections of chlorazol sky blue in cats found that the arteries tended to fall into three types: (1) short arteries supplying the superficial cortical layers; (2) arteries supplying chiefly the intermediate layers and (3) arteries tending to give off branches mainly or only in the deeper cortical layers and which may or may not supply also the white matter. It is probable that the cortical arteries in the human could be classified similarly. In Fig. 8, those glial scars marked "a" resulted from obliteration of type 1 arteries at their point of entry in the gyrus while the scar at "b" may have resulted from obliteration of the lumen of branches of a type 2 artery. The scar at "c" probably resulted from obliteration of a type 3 artery just below the point of entry into the gyrus. Obliteration of a type 1 artery produced, probably, the horizontal glial scar at "d." In the caudate nucleus and putamen the relatively intact myelinated fiber bundles in an area of complete destruction of nerve cells suggests that the blood-supply of white matter and gray matter is different and that the tendency observed so strikingly in the cortex finds an analogy in the lenticular nucleus. Thus one may venture to make a general statement regarding the pathogenesis of the granular or verrucose cerebral atrophies and the chronic subcortical encephalopathies originally described by Binswanger(18). In the former condition the cortical arteries and those vessels supplying the lenticular nuclei over the areas of juncture of the terminal branches of the main arterial systems are involved in a process leading to narrowing and obliteration of the lumen and resultant discrete and compact scarring. In Binswanger's subcortical encephalopathy, these arteries are not affected but the deep penetrating pial arteries, giving off few if any branches to the cortex, are primarily involved in a process of gradual occlusion of their lumen. It is significant to note that in both conditions the arcuate or "U" fibers are usually not involved. In some cases of trauma and in one deteriorated epileptic, I have observed areas of softening limited almost entirely to the region of the arcuate fibers and the sixth layer of the cortex. This laminar involvement suggests that the arteries supplying the deepest layer of the cortex and the "U" fibers were alone involved.

The etiological factors are probably multiple. Meyer(19) found a typical granular atrophy in the brain of a patient, who had suffered a severe carbon-monoxide poisoning in an explosion several years before death. Glial scars, similar to those found in granular atrophy of the cortex, are frequently found in the neighborhood of large areas of softening on an arteriosclerotic basis. Whether vascular spasm, prolonged or intermittently present over a long time, can produce such a picture has been, I believe, satisfactorily answered in the second case by Adolf Meyer(4). In a personal communication he informs me that this patient suffered from Raynaud's syndrome. Hiller(20) suspects that those cases of Raynaud's syndrome with cerebral complications are on a syphilitic vascular basis but his statement seems to be based on apparently

insufficient objective analysis. It is difficult to be certain of the rôle played by the repeated and prolonged states of anoxemia in those epileptics reported by Pozzi(1), Blackburn(2), Meyer(3), Prout(11) and Leri (12) in which granular atrophy of the cortex was observed. The convulsions may have resulted from the marked scarring already present. In those cases reported by Greenfield(10) and Lindenberg(7) the basal arteries were not atheromatous but the sclerosis or endarteritis was apparently limited alone to the small cortical arterioles. In the four cases of granular cortical atrophy reported by Campbell(21) and the case reported here, excessive arteriosclerosis was found. Lindenberg(7) and Lindenberg and Spatz(22) believe that a thrombo-endarteritis is the most common cause of this type of atrophy. Histologically, the media and elastica interna of the arteries remains intact while the intima proliferates and thrombi may form in the already narrowed lumen. They further differentiate this group into two types: type I, of which they collected 14 cases, shows a symmetrical atrophy of the cerebral and cerebellar hemispheres and during life is associated with an indefinite course in which clinical evidence of thromboendarteritis of other parts of the body such as the extremities, retinal vessels, etc., is absent; and type II (8 cases described) in which the atrophy of the brain is irregular with involvement of white matter and during life presents focal neurological signs and clinical findings, typical of Buerger's disease, in other parts of the body. They speak of allergic reactions of the blood-vessels and constitutional factors which allow this type of vascular response to such exogeneous factors as infections, toxins, etc. From the above discussion it is apparent that the etiological factors are unknown. It is reasonable to state, however, that a gradual occlusion or narrowing of cortical arterioles whether by hyperplasia of the intima or by prolonged arteriolar spasm may lead to a unique discrete atrophy of the gray matter limited topographically to certain parts of the nervous system.

Summary and Conclusions

A case of symmetrical, bilateral granular atrophy of the cerebral cortex is described. Topographically, the atrophy is limited mainly to those areas lying at the juncture of the vascular supply of the anterior, middle and posterior cerebral arteries.

The primary involvement of the gray matter differentiates this form of atrophy from Binswanger's chronic subcortical encephalopathy. In the granular type of atrophy of the cerebral cortex those pial arteries supplying the cortex are mainly involved while in Binswanger's encephalopathy, the arteries supplying the medullary layer are primarily affected.

BIBLIOGRAPHY

1. Pozzi, S. Sur un cas de cirrhose atrophique granuleuse disséminée des circonvolutions cérébrales. L'Encephale, **3**: 155, 1883.

2. Blackburn, I. W. A report of post-mortem examination in thirty-nine cases of epileptic insanity. Pathological supplement to 35th Annual Report of the Government Hospital for the Insane, 1890. Case 227. Plate 2.

3. Meyer, A. Pathological report. Illinois Eastern Hospital for the Insane, Kankakee, Illinois. Blakely Printing Co., Chicago, 1896. Case 101, p. 95.

4. Meyer, A. Diffuse cauliflower-like puckering of the cortex in arteriosclerotic epilepsy or diffuse cortical cirrhosis. J. Nerv. and Ment. Dis., **32**: 467, 1905.

5. Spatz, H. Über einige charakteristische makroskobische Befunde bei Geisteskranken. Zentralbl. f. d. ges. Neurol. u. Psychiat., **42**: 121, 1926.

6. Pentschew, A. Die granuläre Atrophie der Grosshirnrinde. Arch. f. Psychiat., **101**: 80, 1933.

7. Lindenberg, R. Über die Anatomie der Cerebralformen der Thromboendangiitis obliterans. Ztschr. f. d. ges. Neurol. u. Psychiat., **167**: 554, 1939.

8. Dougherty, M. Sur l'"Etat Vermoulu" de l'ecorce cérébrale. Rev. neurol., **12**:1239, 1904.

9. Bresler. Klinisch und pathologisch-anatomische Beiträge zur Mikrogyrie. Arch. f. Psychiat. u. Nervenheilk., **31**: 566, 1899.

10. Greenfield, J. G. Discussion on the Presenile Dementias. Proc. Roy. Soc. Med., **31**: 1450, 1938.

11. Prout, T. P. Some minor studies in nerve-cell degeneration as presented by a case of localized cerebral atrophy. Am. J. Insan., **51**: 512, 1895.

12. Leri, A. Cited by Crouzon, O. Arch. Neurol. and Psychiat., **31**:1341, 1934.

13. Alzheimer, A. Ueber perivaskuläre Gliose. Allg. Ztschr. f. Psychiat., **53**: 863, 1897.

14. Spielmeyer, W. Histopathologie des Nervensystems. J. Springer, Berlin, 1922.

15. Duret, H. Recherches anatomiques sur la circulation de l'encéphale. Arch. de Physiol. norm. et pathol. 2nd series, **1**: 60, 316, 1874.

16. Freedom, L. "Angioarchitektonik" in Bumke and Foerster's "Handbuch der Neurologie." **1**: 779. Springer, Berlin, 1935.

17. Campbell, A. C. P. The vascular architecture of the cat's brain. A study by vital injections. Assoc. Res. Nerv. and Ment. Dis., **18**: 69, 1938.

18. Binswanger, O. Die Abgrenzung der allgemeinen progressiven Paralyse, Berl. klin. Wchnschr., **31**: 1180, 1894.

19. Meyer, A. Über die Wirkung der Kohlenoxydvergiftung auf das Zentralnervensystem. Ztschr. f. d. ges. Nerol. u. Psychiat., **100**: 201, 1926.

20. Hiller, F. Die Zirkulationsstörungen des Ruckenmarks und Gehrns in Bumke and Foerster's "Handbuch der Neurologie." Vol. XI, Spez. Neurol., **3**: 258. Springer, Berlin, 1935.

21. Campbell, A. W. Cerebral sclerosis. Brain, **28**: 367, 1905.

22. Lindenberg, R., and Spatz, H. Über die Thromboendarteritis obliterans der Hirngefässe (Cerebrale Form der v. Winiwarter-Buergerschen Krankheit). Virch. Archiv. f. pathol. Anat., **305**: 531, 1939-40.

IN MEMORY OF WILLIAM JAMES[1]

G. S. BRETT, M.A. (Oxon.), F.R.S.C.

Dean of the School of Graduate Studies and Professor of Philosophy, University of Toronto

In this year 1942 the centenary of the birth of William James has been the occasion for many tributes to his memory. In his work various threads of development were woven into a pattern that has endured for fifty years: his genius showed itself equally in his actual achievement and in the impetus which he gave to the progress of thought. His life can be treated as an epitome of the scientific and philosophical movements which were most significant in the middle of the nineteenth century.

James was born in 1842. When he entered the Lawrence Scientific School at Harvard, aged 19 years, he was brought into contact with the major problems of that critical period. He began his studies in chemistry (1861) but two years later decided to enter the department of comparative anatomy and physiology. The kind of research which was required in this field did not suit his temperament: after three weeks he abandoned this project and decided to enter the Medical School. But ultimately he found his real vocation elsewhere.

In 1865 James went to Brazil as a member of the Thayer Expedition under the direction of Agassiz. The doctrine of evolution was just becoming the center of interest. Although he was indisputably the leading naturalist of his day on the American continent, Agassiz was strongly opposed to Darwinism. Darwin sent copies of his *Origin of Species* to Agassiz and Asa Gray in November 1859. Gray was already converted to evolutionism, but Agassiz refused to support the new doctrine: he followed the lead of Cuvier who had ridiculed Lamarck and succeeded in persuading his disciples that the species of different geological ages had been created "after successive cataclysms." The publication of the *Descent of Man* in 1871 made the controversy more bitter: active persecution began and more than one professor was deprived of his position for teaching evolutionism. In this stormy period James was still slowly working his way toward the choice of a career. In 1866 he went to Europe and undertook the study of experimental physiology at Berlin. Illness prevented him from doing serious work, but he began to think that the borderland of physiology and psychology was the place where he would find the most congenial prospect. Helmholtz and Wundt at Heidelberg were then prominent in that line. But again the times were unfavourable: the courses were almost concluded. James departed and once more appeared in the Medical School at Harvard: he graduated in 1869, the year in which Charles Eliot became President. Another period of illness followed and it was not until 1872 that he began teaching physiology in collaboration with Dr. Timothy Dwight. At the end of the year he surrendered the position and the six hundred dollars salary attached to it. In 1874 he began again teaching the course on *The Comparative Anatomy and Physiology of Vertebrates,* and continued this work for five years. Wyman had established a laboratory and a Museum of Comparative Anatomy, which James was asked to direct. Professor Charles Loring Jackson, then at Harvard, told James that in Berlin when he was working with amyl nitrite an Englishman who was present "began singing and laughing as though he were drunk." James decided to try some of it and put it to his nose to take a good sniff: "then he felt blindly for the table, put the bottle on it, said 'O! how queer I feel!' took up two battery-jars full of alcohol and started across the yard." This was James' first experience of that relation between bodily and mental states on which he afterwards spent much of his time.

James was now moving definitely in the direction of psychology. The work of Herbert Spencer had begun to attract attention. Without any special training in the exact sciences and no knowledge of laboratory

[1] Abbreviated from an address delivered before the Seminar of the Psychiatric Hospital, Toronto, Jan. 31, 1942.

work, Spencer succeeded in his *Principles of Biology* and *Principles of Psychology* so far as to create the modern point of view. Spencer's *Synthetic Philosophy* was supported by finances from America: his writings were relatively well known in America and the students were anxious to keep up with the times. In 1876 James offered what was called "the new Spencer elective." It was the first undergraduate course in psychology which he gave, and it marked the transition from the traditional treatment of that subject. With Spencer himself James professed complete disgust: the course was really an experiment on the part of James in the direction of his own views that psychology must be taught as a branch of science, not as literature or theology.

The origins of the new psychology of 1879 go back to the work of Johannes Müller whose *Handbuch* in 1840 was the foremost work on physiology and was specially significant for its treatment of the physiology of the senses. Müller also revived from the forgotten pages of Aristotle the problems of after-images, which he treated in a separate work. From Müller proceeded a whole line of investigators. E. H. Weber in 1846 discovered the formula known as Weber's Law which expresses the correlation between increase of the stimulus and the resulting perception. This occupation became a cult in Germany when in 1860 Fechner produced a large work on *Psychophysik*. Fechner combined an interest in electricity with a profound mysticism. He established some useful facts about the relations between stimuli and perceptions, but he also held that there was a Universal Soul of which individual souls were parts. James expressed distrust about the scientific part of Fechner's work but was inclined to view with favor the mystical doctrine.

When James was in Germany he followed closely the work of Helmholtz on physiological optics and on sound. Helmholtz was a mathematical physicist and his work was the greatest contribution of the century toward a synthesis of the physical and physiological conditions of sense-perception. The analysis which Helmholtz made of the conditions of vision and particularly color-vision, also of the analogous conditions of hearing, dealing both with the external waves and the internal processes in the retina and the internal ear, was an achievement that had no rival. But it was still possible to say that Helmholtz was not properly speaking a psychologist. His assistant W. Wundt accordingly gets the honor of founding modern psychology, though Wundt's methods were at first limited to the kinds of experience which could be tested and measured by physical instruments.

A number of factors conspired to divert James from this line of development. His sight was poor: some affliction prevented him from standing for long periods in a laboratory: he was constitutionally impatient and unfit for the demands of exact research. Added to these was the fact that his training in medicine seems to have produced in him a strong interest in the welfare of persons rather than the analysis of processes. The advantages of these characteristics were seen in the capacity of James to appreciate the work of the French school. The French were predominantly concerned with questions of abnormal psychology and attained a leading position in this field about 1860. After the stormy days of Mesmer and the final condemnation of his pretentions the French settled down to intensive study of what emerged from that era—namely hypnotism and suggestion. After 1860 there is a steady growth in the study of mental abnormality and the school of Charcot stood in the forefront. Charcot was succeeded by others, notably Janet, of whose work James said that it was worth "all 'exact' laboratory measurements put together." This judgment was an error in excess; it showed that James did not properly value the necessity of studying so far as possible all the reactions of individuals: and yet no one more persistently argued the case for making psychology a natural science. At heart James was a philosopher: he knew that fact himself and he brought from Germany Muensterberg to be director of the psychological laboratory. But James had created it and when his priority was challenged he defended his claims. Apparently a laboratory for experimental psychology was started at Johns Hopkins in 1881. It was referred to as the first, but James refused to allow this and the evi-

dence shows that he had begun as early as 1875 or 1876. The transition from physiology to psychology was so gradual that it is difficult to state exactly when it occurred. The physiological laboratory of Dr. H. P. Bowditch at the Medical School, North Grove St., Boston, is said to have been the first laboratory for experimental medicine in the United States; of this James made use as early as 1872 and he always had a faculty for "trying things" which led him to indulge in unexpected and unorthodox forms of experiment. All previous efforts were overshadowed by the laboratory started by Wundt in 1879, and this had the advantage of continuing on a large scale. If James can be given the credit of being first in the field, the importance of the question is minimized by the fact that James did not feel that his vocation lay in that work. In spite of this the demand increased and James in 1890 raised $4,300 dollars to equip the new laboratory in Dane Hall, which he then transferred to the care of Hugo Muensterberg.

After twelve years of interrupted efforts James published the famous *Principles of Psychology:* and after that he wrote no more psychology in the strict sense. The success of the *Principles* was due to the combination of physiological, normal and pathological studies which it presented: added to that was a style wholly new in the world of scientific treatises.

In his psychology, as in everything else, James inclined to be unorthodox. This characteristic was not due to ignorance or wilfulness: it was rather due to an unusually extensive knowledge of the different sciences which converge on the explanation of human life, and to a profound dislike for arbitrary or "theoretic" limitations. In the transition from formal or structural to functional psychology James was the major influence: he discarded the older language in favor of vivid clinical descriptions. For example, in place of the traditional treatment of memory as a faculty he collected examples of the varieties of remembering, the effect of emotion on memory, cases of amnesia and so on. Another example is the well-known treatment of emotion as the reaction of bodily conditions on mental states. In this he had actually been anticipated by a German anthropologist Henle of Göttingen (1876): also Darwin's work on *The Expression of the Emotions* (1871) was suggestive of the same sort of interpretation. The article by James "What is an Emotion?" appeared in 1884. In 1887, independently, a Danish physiologist Lange gave the same explanation. The novelty of the theory consisted in the point that emotions are completely psychophysical: the bodily states contribute the essential difference between perception and emotion; consequently the causal series is reversible: we may weep because we are sorry or feel sorry because we weep. Lange came to his conclusions by purely physiological examination of the vascular and other changes which occur in an emotional paroxysm. James was interested in the diagnosis of feelings, such as groundless fear, which are generated by bodily conditions. He was a good observer and had plenty of material for study in his own experiences: hypochondria, hallucinations and sudden changes of mood were afflictions of which he had personal experience; they account in part for the attention he paid to "exceptional mental states." On one occasion he experimented with nitrous-oxide-gas and observed the kind of exalted thinking which it induced: he was willing to accept the view that the experiences of saints and mystics might be accounted for by similar conditions, whether artificially produced or caused by some kind of autointoxication: but he never admitted that this was always the case or that abnormal physiological conditions were the universal explanation of exceptional achievements. On the contrary he was inclined to the view that there was no known limit to conscious powers, that the body inhibits action and that the energies of men need to be released.

This was more a philosophical standpoint than a scientific conclusion, but it had the good result of making James willing to risk some loss of prestige in the pursuit of unconventional aims. In this spirit he entered upon the schemes of the Psychical Research Society, a sphere of activity referred to as "the scientific underworld." Psychoanalysis had not at that time come into vogue. James was convinced that many troubles were what is now called psychogenetic. Consequently

he saw in psychical research a kind of adventure which might lead to something and as such should not be extinguished by mere conventionalism. He was consistently sceptical of the actual procedure in such cases as that of Mrs. Piper: but he found plenty of work in the study of such phenomena as those of hypnotic states, automatic writing and hallucinations. In part he was instigated by the belief that honest research would destroy dangerous tendencies, such as belief in evil spirits or forms of possession, neither of these being wholly extinct. In part, also, he anticipated a positive increase in human knowledge from the study of what was, on the least reckoning, the variety of human desires, beliefs and emotions. The French school of psychopathologists had achieved some astonishing results: what were commonly considered either miraculous events or unadulterated lies (according to the individual's prejudice), had been resolved into definite facts, abnormal but not either supernatural or unintelligible. The phenomena broadly named hysteria had been brought within the respectable limits of science: it was reasonable to suppose that further progress might be made. Acquaintance with this work was shown by James in his *Principles of Psychology* where he discussed "dissociation, somnambulism, hysteric anæsthesia, amnesia, multiple and alternating personality, subconsciousness and trance phenomena." If these are subjects no longer considered unfit for serious attention, this result is largely due to the courage with which James in his day put them in the pages of a standard work on psychology. He stuck to his principle that the first thing is to get the facts: but he had to suffer annoyance and disgust. The famous case of Eusapia Palladino in 1909 was particularly annoying: it was immortalized in the poem

> Eeeny-meeny miney mo
> Catch Eusapia by the toe
> If she hollers that will show
> That James's theories are not so.

In 1906 James showed once more those qualities of sympathy and enterprise which made him to an extraordinary degree loved as well as admired. In that year Clifford W. Beers "sent him the MS. of his now famous book *A Mind That Found Itself.*" James "read it with enthusiasm, helped him to find a publisher," and began to labor for a more enlightened attitude toward mental diseases. James assisted in the organization of the National Committee for Mental Hygiene which was founded in 1909. He wrote to John D. Rockefeller a long letter which contains this passage worthy to be quoted: "Our usual arrangements take no heed either of prophylaxis or of after-care; what should be regarded as a common functional disorder is handled as a social stigma: everywhere routine and safety are the first considerations, prevention and cure take the second place. There must from now onward be a tremendous campaign waged for prevention and cure." The movement which James thus helped to launch has continued: the deeds men do live after them: but James did not survive to know the results. He died in 1910.

In the narrow limits of this description it is not possible to do justice to all the aspects of our subject. The occasion will not allow us to do more than glance over the years and recall the most significant facts. The circumstances of his early training and the revolutionary character of the scientific progress in his time contributed to produce in the work of James a new and fruitful synthesis. The traditional type of American thought was expanded by influences from Europe: the method and spirit of the natural sciences were carried over into the study of the mind: and the whole range of human activity was illuminated by insight derived from sources ranging from the physiology of the laboratory to the speculations of transcendental philosophy and the records of religious experience. Though time may bring to light errors and omissions, the influence of William James will remain as one of the significant factors in the progress of the mental sciences.

Note.—The writer desires to make acknowledgment of the use of some information derived from the work of Professor Perry, *The Thought and Character of W. James.*

COMMENT

MENTAL HOSPITAL SURVEY

In the May, 1940, issue of the JOURNAL report was made of the fact that the work of the Mental Hospital Survey Committee, composed of representatives of eight American and Canadian organizations and agencies, was taken over on July 1, 1939, by the United States Public Health Service and incorporated in a new section on mental health methods of its Division of Mental Hygiene. At the request of Surgeon General Parran the Mental Hospital Survey continued as an advisory committee. Dr. Samuel W. Hamilton, who had served as medical director of the Survey Committee, was placed in charge of the new section with the title of Mental Hospital Adviser. With the loyal support of Dr. Lawrence Kolb, Assistant Surgeon General in charge of the Division of Mental Hygiene, and with a satisfactory budget, the scope of the work as previously carried on has not only been continued but in certain respects has been extended. The major activity has continued to be the surveying of public mental hospitals. Between July 1, 1939, and May 15, 1942, complete surveys were made of sixty-five institutions located in twenty different states. These institutions included hospitals for mental diseases, institutions for epileptics and schools for feebleminded. Studies were made of the psychiatric services of nineteen different general hospitals. In addition to these surveys and studies visits were made to fifty-nine state hospitals, state institutions, federal institutions and private institutions for the purpose of noting changes and betterments in practice, because advice was requested on additional points or for other special reasons. The surveys were made at the request of state governors, administrative boards and occasionally by a mayor. By arrangement with other government departments surveys of federal mental hospitals have in many instances been included when surveys were being made in contiguous states. Before being finally formulated and submitted to the state officials at whose requests the surveys were made the reports have been referred to members of the Advisory Committee for comment and suggestion. The reports have been so comprehensive that officials could at once secure an uncommonly informative picture of the institutions surveyed. In addition to the administrative and psychiatric factual data concerning the institutions and their practices the reports have presented comparative data relative to similar institutions in other states, thus acquainting central boards of control and other administrative agencies with standards prevailing elsewhere. All reports have included constructive recommendations both in respect to matters deserving immediate consideration and to future planning. Further service has been rendered by discussions before legislative committees. Many inquiries are received by the section concerning administration, equipment, personnel, policy and treatment in mental hospitals.

For approximately a year Dr. Grover A. Kempf, of the Public Health Service, was on duty with the section on mental health methods and was associated with Dr. Hamilton in making surveys. In July, 1940, Dr. Kempf was transferred to other duties and was succeeded by Passed Assistant Surgeon Victor H. Vogel. Dr. Vogel, who was assigned to the section until March, 1942, was engaged primarily in developing mental hygiene programs in state departments of health although as opportunity offered he joined in surveying state hospitals and schools for defectives.

In September, 1941, Miss Mary E. Corcoran, R. N., was appointed as nursing consultant to the section on mental health methods for the purpose of studying and advising relative to nursing in public mental institutions. Miss Corcoran had had wide experience in psychiatric nursing, the last seven years of which were spent as superintendent of nurses at the New Jersey State Hospital, Greystone Park. In addition to her activities in promoting psychiatric nursing as a part of

general nursing education Miss Corcoran participates in the surveys made by medical members of the section. With the more complete presentation of nursing problems and needs made possible by Miss Corcoran's participation in surveys the reports of the surveys are of definitely greater value to the officials at whose requests the surveys are made.

For many years it was the conviction of psychiatrists interested in the improvement of public mental hospitals that surveys similar to those now conducted should be made. It is a great satisfaction that this work and other activities which are already in many instances improving the standards of care and treatment of patients in public mental institutions have been undertaken by a governmental agency that has long enjoyed the confidence of the medical profession and the general public.

ARTHUR P. NOYES.

DR. MIRA DELIVERS SALMON LECTURES

Among the leaders in science whom Europe has lost and the Americas have gained during the temporary decline of civilization in the former country, is the eminent Spanish psychiatrist, Dr. Emilio Mira, presently professor of psychiatry in the University of Buenos Aires.

The Thomas W. Salmon Committee on Psychiatry and Mental Hygiene, under the chairmanship of Dr. C. C. Burlingame, selected Dr. Mira to deliver the Salmon lectures, 1942, under the auspices of the New York Academy of Medicine. Dr. Mira was formerly professor in the University of Barcelona and was in charge of psychiatric services in the Republican Army in Spain during the recent Civil War in that country. His New York lectures were given at the Academy of Medicine on the evenings of November 6, 13 and 20, 1942.

In Dr. Mira's view the increasing brutality of the German war machine toward civilian populations is unmistakable evidence of growing weakness. This form of revenge ("displaced anger") against helpless peoples is resorted to by an army which finds itself unable to overcome its major opponent and therefore vents its fury upon the defenseless.

"Modern warfare is best fought by men who fight with minds unclouded by ferocity."

With regard to stimulants to heighten combat efficiency, results during the Spanish Civil War indicated "that the administration of alcohol during combat lessened efficiency. On the other hand benzedrine during prolonged battle is a desirable method of combating fatigue."

Fear states were found to be due to well-defined causes—lack of leadership, overexertion with lack of sleep or food, overwhelming darkness and noise, encirclement, uncertain plan of action, strangeness of the individual soldier's situation. A panic-inducing trick the Rebels sometimes used in the Spanish War was to detail a few troops to various points on the outskirts of the Loyalists' position and suddenly hoist flags, thus producing the terrifying impression of complete encirclement.

Dr. Mira spoke of the importance to mental health of belief in one's objectives and their attainability. "A faithless army is an army which develops many neuroses; if there is real faith in the ends for which the army is fighting, as there was in Loyalist Spain at the outset, the incidence of breakdowns is negligible. It was only when the Spanish people became apathetic, seeing that there was to be no help from outside sources, when they had lost faith in the future, that they began to show mentally the impact of the war."

Safeguarding the health of commanding officers is obviously of the very first importance. "The overworked or exhausted leader may lose a battle because he is too proud to admit that he is worn out and to ask for a rest. . . . . It is much more important to get a rest for an exhausted chief of staff than it is to select accurately 100 soldiers. The Spanish War is rich in experiences which show how necessary it is."

Among the curiosities of war experience are certain mild schizophrenics who react

well under battle stress which makes them forget their inner conflicts and behave like normal people. Psychoneuroses, on the other hand, are increased by the conditions of warfare and pre-existing neurotic tendencies are aggravated, and if relieved are apt to recur.

Referring to the *Fuehrer Probe*, or test for leaders in the German Army, Dr. Mira pointed out that tests for officer candidates are very comprehensive, lasting two full days and covering all aspects of the candidate's physical, mental and emotional experience. "The psychological examination is not finished when the test is over; it continues through the life of the officer, with all his actions continually being compared with the results of the first test."

In his final lecture Dr. Mira described a new psychological test which he had devised for the quick determination of the fighting capacity of the individual, whether private or commander, thus making possible a check on the state of morale, emotional balance and psychomotor resources under conditions of cumulative stress, exhaustion, etc. The test consists in having the subject make small oscillatory tracings on a sheet of paper in all directions of the compass according to a pattern which is placed before him, the movements of his hands being screened from his own vision. Both hands are used and their movements compared. It is Mira's view that in righthanded subjects the right side is more expressive of the actual state of cortical activity, the left being more expressive of constitutional trends. The performance is evaluated in terms of the amount and direction of shift in movements as indicated by the pencil tracings, the shift reflecting the predominance of muscular tensions. Thus when the "fighting purpose" is predominant, the so-called aggressive movements are more easily performed, whereas with decrease in fighting power the so-called defensive movements more commonly occur. These tests have been checked with large groups of normal and abnormal persons to establish their dependability. Of major advantage are the simplicity and celerity of the tests; they can be applied in about ten minutes.

In addition to the lectures in New York, Dr. Mira addressed neurological and psychiatric societies in Philadelphia, Boston, Galveston, Houston and New Orleans, and held conferences with Army Air Force officers at Randolph Field Army Base in San Antonio and with Army, Navy, War Department and Selective Service officials in Washington.

Dr. Mira is the author of a useful textbook of psychiatry, published in Barcelona in 1935. It is understood that he is now working on a second edition.

WESTERN STATE PSYCHIATRIC HOSPITAL, PITTSBURGH

NEWS AND NOTES

WESTERN STATE PSYCHIATRIC HOSPITAL, PITTSBURGH, PENNSYLVANIA.—The Western State Psychiatric Hospital at Pittsburgh was formally dedicated on September 11, 1942. The many public spirited citizens and officials attending the ceremonies packed the auditorium and overflowed into the hospital corridors which were provided with amplifiers.

The Honorable E. Arthur Sweeny, Secretary of Welfare presided. The Invocation was by The Very Reverend James A. Reeves, S.T.D., LL.D., Litt.D. The Honorable Cornelius D. Scully, Mayor of Pittsburgh, welcomed the guests. Mr. David H. Diehl, Executive Director of the General State Authority (the agency set up by legislative action to supply the funds for this and other buildings in the State program) related some of the difficulties encountered and the costs. Dr. John Gabbert Bowman, Chancellor of the University of Pittsburgh, spoke in appreciation of the facilities added to the medical school, their need and the opportunities presented. Dr. William S. McEllroy, Dean of the School of Medicine, University of Pittsburgh, described the great medical centre in building. Dr. William C. Sandy, Director of the Bureau of Mental Health, Department of Welfare, briefly outlined the history of the hospital—how it was conceived in 1924, the various viscissitudes until completion in 1942, and the objectives. Dr. Grosvenor B. Pearson, the Director of the hospital, envisioned the opportunities and responsibilities, and indicated how they may be met. The Honorable Arthur H. James, Governor of Pennsylvania, as the principal speaker, gave a characteristic interesting and stimulating address, a real mental hygiene contribution. After the benediction by The Reverend William J. Reid, D.D. Litt.D. the ceremonies closed with singing the National Anthem.

The first patients were received in November upon authorization of transfer by the Bureau of Mental Health, the cases being selected from other hospitals because they presented problems of educational and research value.

PUBLIC HEALTH NURSES NEEDED.—The U. S. Civil Service Commission recently issued a call to public health nurses through the pages of this JOURNAL. The Commission has now asked that we print a correction regarding a statement made in error in their press release regarding the omission of high school education as a requirement for public health nurse positions. In effect the educational requirements for public health nurse cannot be met without completion of high school education.

The public health nurse positions pay $2,000 a year. The requirements are: completion, subsequent to January 1, 1920, of a full course in a recognized school of nursing including 2 years in a general hospital having a daily average of 50 bed patients or more; registration as a graduate nurse; and completion of one year of study in public health nursing at a college giving a course approved by the National Organization for Public Health Nursing. One year of public health nursing experience is also necessary.

Other nursing opportunities open in the Federal service include the following: junior public health nurse, $1,800 a year; graduate nurse, $1,800 a year; junior graduate nurse, $1,620; graduate nurse for the Panama Canal service, $168.75 a month; nursing education consultant, $2,600 to $4,600 a year; and public health nursing consultant, $2,600 to $5,600 a year.

Except for Panama Canal service there are no age limits for any of these positions. Applications will be accepted at the Commission's Washington office until the needs of the service have been met.

DEATH OF MRS. PAULINE DAVIS.—The sudden death of Mrs. Pauline Davis on July 11, 1942, came as a shock to the large circle of her friends. Up to the time of her death she had been carrying on actively her scientific work. During the past few years she

had been particularly interested in electroencephalographic studies and, along with her husband and other colleagues, had done pioneer work in this field. On more than one occasion she had presented the results of her work to the members of The American Psychiatric Association. Mrs. Davis had from her college days shown much interest in biology. After the last war she did work in the Near East and contracted typhus while in Constantinople. In 1923 she married Dr. Hallowell Davis. After her marriage she continued to pursue her scientific studies. These were not confined to the physiological laboratory but were also carried on in various hospitals in the Boston area.

SOUTHERN PSYCHIATRIC ASSOCIATION MEETINGS DEFERRED.—The Officers and Fellows of the Southern Psychiatric Association regretfully announce that the annual meetings of this Association will be postponed for the duration of the National Emergency. This step has been taken because of the large number of members who are now serving the armed forces, because of the greatly reduced personnel in the institutions served by our older members and because of the request for restricted travel by our government agencies.

Our roster of officers and members will be frozen and all dues suspended until the emergency has passed.

In the meantime the Secretary of the Association requests that he be kept informed of any change in address of members and be advised of all matters pertaining to the welfare of the Association.

NEWDIGATE M. OWENSBY, *Sec.-Treas.*

PRIZE ANNOUNCEMENT.—A prize of $100 is offered by the Menninger Foundation for Psychiatric Education and Research for the best suggestion for a window display in a New York bank presenting the uses and purposes of psychiatry. The window is thirteen feet long, six feet high, and its deepest point about eight feet; it curves so that it is narrower at the ends. It will be seen chiefly by laymen and hence the display should be in the nature of an educational theme, convincingly and graphically presented. It should dramatize the way in which psychiatry can be or is being useful either in the present war emergency or in peace time.

The judges will be Dr. George Stevenson, Director of the National Committee for Mental Hygiene, Mr. Albert Lasker, of Lord and Thomas, and Dr. Lawrence Kubie.

Ideas should be submitted in detail, preferably with drawings or diagrams, directly to Dr. William C. Menninger, Director of The Menninger Foundation, Topeka, Kansas, on or before January 31, 1943.

ADVANCED PSYCHIATRIC NURSING, COLUMBIA UNIVERSITY.—A professional affiliation between the department of nursing of the College of Physicians and Surgeons of Columbia University (Presbyterian Hospital School of Nursing in the city of New York) and the Neuro-Psychiatric Institute of the Hartford Retreat is announced jointly by Miss Margaret E. Conrad, professor and executive officer of the department of nursing at Columbia University, and Dr. C. Charles Burlingame, psychiatrist-in-chief of the Neuro-Psychiatric Institute.

Under this affiliation, students with university degrees who are receiving advanced time credit in the department of nursing, College of Physicians and Surgeons of Columbia, will undertake an intensive two months' course in neuro-psychiatric nursing at the Institute, under the direction of the Institute's medical and nursing staffs.

The affiliation is limited to those students who have received university degrees and whose qualifications have permitted them to undertake to complete their basic training course in Columbia's department of nursing in twenty-eight months, instead of the usual three years. The training is designed for administrative positions and posts of leadership in the field of nursing. Fifteen students are expected to begin classes in December.

The affiliation marks the educational linking of three of the nation's oldest and most distinguished medical institutions—Columbia University, founded in 1754; the Neuro-Psychiatric Institute, founded in 1822; and the Presbyterian Hospital, opened in 1868. The Nursing School of the Presbyterian

Hospital received university status in 1937, and the hospital celebrated its fiftieth anniversary in June, 1941.

SCIENCE, WAR AND HUMANITY.—In announcing the regular year-end meeting in New York City of the American Association for the Advancement of Science, of which The American Psychiatric Association is an affiliate, the permanent secretary, Dr. F. R. Moulton, calls attention to a resolution which the Association passed at its annual meeting in Indianapolis five years ago. It reads as follows:

> WHEREAS, Science and its applications are not only transforming the physical and mental environment of men but are adding greatly to the complexities of their social, economic and political relations; and
>
> WHEREAS, Science is wholly independent of national boundaries and races and creeds and can flourish permanently only where there are peace and intellectual freedom; now therefore, be it
>
> *Resolved*, By the Council on this thirtieth day of December, 1937, That the American Association for the Advancement of Science makes as one of its objectives an examination of the profound effects of science upon society; and that the Association extends to its prototype, the British Association for the Advancement of Science, and to all other scientific organizations with similar aims throughout the world, an invitation to cooperate not only in advancing the interests of science but also in promoting peace among nations and intellectual freedom in order that science may continue to advance and to spread more abundantly its benefits to all mankind.

What, Dr. Moulton asks, will the Association say at its meeting in December 1942?

> If the Association avails itself adequately of this favorable opportunity of speaking for American science, its voice will be heard throughout the Western Hemisphere, along the heroic front from the Baltic to the Volga, in weary China, in sullen India, and gradually in unhappy France and other subjugated countries.

APPOINTMENT OF MR. KOMORA AT ALBANY.—Mr. Paul O. Komora, a senior member of staff of the National Committee for Mental Hygiene, has been appointed assistant secretary of the New York State Department of Mental Hygiene and took up his new duties in Albany, August 1, 1942.

Mr. Komora became associated with the National Committee under its first director, Thomas W. Salmon, in 1917; he had completed, therefore, twenty-five years of devoted and invaluable service to the Committee when he entered upon his new position. He had served as secretary to Col. Salmon both overseas during World War I and later at the New York headquarters of the Committee, and since 1932 had been the associate secretary of that body. His length of service was exceeded only by that of the founder, Clifford W. Beers. Heavy editorial and research responsibilities had fallen upon Mr. Komora who was a major contributor to *Mental Hygiene* and other publications of the Committee. His long experience and extensive knowledge in the fields of mental health and illness and social work will make him a valuable member of Commissioner Tiffany's staff at the State Capitol.

POST-WAR CIVILIZATION.—"Confronted with a world in which ruthlessness must be employed to destroy a far more dangerous kind of ruthlessness, organizations like the Rockefeller Foundation, dedicated to the extension of knowledge, can only reaffirm their undiscourageable belief in the ultimate power of reason. As Alvin Johnson says: 'The rules of civilization, wrought out on Sinai and the Areopagus, ... are prior to the bomber and poison gas, and will survive beyond them.' The Bill of Rights will outlast *Mein Kampf* just as the scientist's objective search for truth will outlive all the regimented thinking of totalitarianism. Temporarily eclipsed, the proud names of Paris, Strasbourg, Prague, Louvain, Warsaw, Leyden, as well as of Heidelberg and Leipsic and Berlin, will once again stand for the quest of truth; once again they will be centers of candid and fearless thinking—homes of the untrammeled and unafraid, where there is liberty to learn, opportunity to teach, and power to understand. . . . .

"If we are to have a durable peace after the war, if out of the wreckage of the present a new kind of cooperative life is to be built, on a global scale, the part that science and advancing knowledge will play must not be overlooked. For although wars

and economic rivalries may for longer or shorter periods isolate nations and split them up into separate units, the process is never complete because the intellectual life of the world, as far as science and learning are concerned, is definitely internationalized, and whether we wish it or not an indelible pattern of unity has been woven into the society of mankind. . . . .

"In peace as in war we are all of us the beneficiaries of contributions to knowledge made by every nation in the world. . . . . The best that every individual or group has produced anywhere in the world has always been available to serve the race of men, regardless of nation or color. . . . . Thought cannot be nationalized. The fundamental unity of civilization is the unity of its intellectual life.

"There is a real sense, therefore, in which the things that divide us are trivial as compared with the the things that unite us. . . . . In brief, the age of distinct human societies, indifferent to the fate of one another, has passed forever. . . . . "—RAYMOND B. FOSDICK, *president of The Rockefeller Foundation in his Annual Report for 1941.*

MANUAL OF CIVILIAN MENTAL HEALTH.—The Committee on War Psychiatry of The American Psychiatric Association has brought out a publication dealing with the steps which have been taken for the maintenance and improvement of civilian mental health in various types of community throughout the country. The procedures used in state-wide areas, large cities and metropolitan districts, and in small towns and rural areas have been assembled and their fundamental principles have been described.

This publication may be obtained without cost on application. More detailed information on particular aspects of civilian mental health may be obtained by request. These outlines may be obtained from Dr. T. Raphael, University of Michigan, Ann Arbor, Michigan; Dr. F. H. Sleeper, 100 Nashua Street, Boston, Massachusetts; and from Dr. D. Ewen Cameron, Albany Hospital, Albany, New York.

More fully detailed accounts of special aspects of civilian mental health in rural areas may be obtained from Dr. Raphael; in state-wide areas from Dr. Sleeper; and in large cities and metropolitan areas from Dr. Cameron.

GENERAL SEMANTICS LECTURE COURSE.—The Institute of General Semantics, Chicago, announces a series of 12 lectures and conferences by Count Alfred Korzybski, February 2-April 20, 1942 (Tuesdays 7-10 p. m.). The tuition charge is $25, including registration fee of $10. Advance registration is required before January 18.

For information or registration form address: Institute of General Semantics, 1234 East 56 Street, Chicago.

CANCELLATION OF SESSION.—The Board of Regents of the American College of Physicians has announced that because of circumstances of the present emergency the 1943 annual session, which was scheduled to be held in Philadelphia, April 13-16, 1943 will be cancelled. Approximately 25% of all doctors have been called to active military service, and the number is increasing. In consequence civilian doctors are faced with growing demands upon their time for teaching and practice. President James E. Paullin announced, however, that all other activities of the College would be pursued with even greater zeal, and that the College would especially promote regional meetings over the country and organize post-graduate seminars in the various military hospitals for doctors in armed forces.

PENNSYLVANIA PSYCHIATRIC SOCIETY MEETING.—Colonel Leonard G. Rowntree, M. C., U. S. A., Chief Medical Division, Selective Service, spoke on "Selective Service and Psychiatry," at the fourth annual dinner meeting of the Society, at the University Club, Pittsburgh, October 8, 1942. George J. Wright, M. D., President-Elect of the Society presided in the absence of the President, Lt. Col. Baldwin L. Keyes, Medical Corps, U. S. Army.

Honor guests were: Captain Raymond

Clouse, representing Colonel B. F. Evans, Acting Director, Selective Service, Commonwealth of Pennsylvania, and Walter F. Donaldson, M. D., Secretary of the Medical Society of the State of Pennsylvania.

An afternoon scientific session was held at the Western State Psychiatric Hospital at which papers were presented by William C. Sandy, M. D., Director, State Bureau of Mental Health, Harrisburg; Grosvenor B. Pearson, M. D., Superintendent Western State Psychiatric Hospital, Pittsburgh, Herbert H. Herskovitz, M. D., Clinical Director Norristown State Hospital.

Officers for the year 1942-1943 were elected as follows: George J. Wright, M. D., President, Pittsburgh; Ralph L. Hill, M. D., President-Elect, Wernersville; and LeRoy M. A. Maeder, M. D., Secretary-Treasurer, Philadelphia.

BOOK REVIEWS

EPILEPSY AND CEREBRAL LOCALIZATION. By *Wilder Penfield and Theodore C. Erickson.* (Springfield, Illinois: Charles C. Thomas, 1941.)

This book is primarily a study of pathological function; it tells of a great number of observations on epileptic patients. The point of view is physiological throughout and the book is one of the greatest contributions to the understanding of fits that has ever been written.

A series of cases of focal epilepsy treated by craniotomy provided the major source of material for physiological, psychological and anatomical studies of the human cerebral cortex. The histology of cerebral scars, the cytology of the brain, the structure and control of cerebral vessels and the physiology of cerebral blood flow have formed the subjects of what might be called the authors' preliminary research. Collateral studies were made upon patients suffering from all types of convulsive states by electroencephalography and pneumoencephalography as well as by the analysis of seizure pattern and clinical picture.

For students of neuroanatomy and neurophysiology, the direct observations made upon the cerebral cortex of conscious patients and the descriptions of patterns of epileptic discharge provide a rich material for study. The chapters on "Seizure Patterns" and "Mechanism of Epileptic Seizures" bring much important data to the physiologist who is interested in the function of the human brain. "Epilepsy" is considered as the tendency to recurring epileptic seizures. An epileptic seizure is a state produced by an abnormal excessive neuronal discharge within the central nervous system. An epileptic seizure is therefore a symptom of disease, but epilepsy itself should not, strictly speaking, be used as a name for that disease. If the different conditions which produce recurring epileptic seizures are grouped together they may be referred to as "the epilepsies," a term used by Jackson and recently by Wilson. The epilepsies have one common feature: a direct influence upon the central nervous system, which results in recurring explosive neuronal discharges. On pathological grounds, the epilepsies differ widely, but there is a common physiological mechanism which produces the outward manifestations of a seizure.

The chapter on cranial roentgenography treats chiefly of the atrophic lesions of the brain and skull. Acute head injuries are discussed with particular reference to practical surgical treatment and the prevention of post-traumatic epilepsy. The surgical results of the authors are given in detail. Over a ten year period 165 operations were performed for the removal of cerebral or meningocerebral scars. Since operation 22 per cent of the patients with meningocerebral scars and 19 per cent of those with cerebral scars have been entirely free from attacks. An additional 54 per cent of the patients with meningocerebral scars were conspicuously improved, the corresponding figure for purely cerebral scars being 40 per cent.

The clinical descriptions of various seizures and their classifications in relation to localization and electroencephalography is an important advance. Penfield gives a sound clinical classification and Jasper substantiates the neurological observations with the electroencephalogram (Chapter XIV). He makes four salient points:

> "(1) Epilepsy, as viewed by electroencephalography, consists of recurring paroxysmal high voltage waves, electrical signs of excessive synchronized neuronal discharge or *hypersynchrony*. Often, but not always, there are associated abnormal rates of cerebral discharge or dysrhythmia, tachyrhythmia or bradyrhythmia.
>
> "(2) The epilepsies may be divided into three principal groups with regard to localization of abnormal waves; (a) *localized* to a specific cortical area of one hemisphere, (b) *bilaterally synchronous* from homologous areas of the two hemispheres, and (c) *diffuse*, widespread, disorganized abnormal waves often with generalized cerebral tachyrhythmia or bradyrhythmia.
>
> "(3) The form of local cortical epileptic discharge recorded near its source, is the same from any superficial cortical area while the form of clinical seizure depends upon the function of cortical area of onset and path of march.
>
> "(4) There is a close correspondence between cortical localization by the EEG and the localization arrived at by analysis of the nature of the onset of the clinical seizure."

Although the book is written largely from surgical experience, the authors have also seen a large number of epileptic patients of the cryptogenic type. There are two chapters on these more medical aspects. The inheritance of epilepsy is discussed and the data are well presented. Under "extracerebral causes" is a discussion of various systemic variants of circulation, water metabolism, etc., which effect fits. The authors clearly state that epilepsy is cerebral and that these are really precipitating causes, if causes at all.

The medical aspects of epilepsy are discussed especially in chapters XI, XII, XVI and XVII, although physiology and medicine go hand in hand with surgery throughout the rest of the book. Cryptogenic epilepsy is discussed at length and its close relationship to the inherited type of the disease is brought out. The authors do not believe that inherited predisposition is important in "symptomatic" epilepsy. Cryptogenic ("ideopathic") epilepsy is described as a type that comes on in youth, 9 to 14 years; the seizure type is frequently "petit

mal" with or without occasional convulsions. The brain is grossly normal, at least during the early stages, later there may be diffuse but moderate atrophy with enlarged ventricles. The EEG shows slow waves or wave-spike formations that are bilaterally synchronous. This definition is important, because it shows that a positive syndrome is beginning to be recognized. The old method of ruling out all known causes and lumping the residual as "ideopathic" by exclusion, is discarded. It is also brought out that fits commonly occur in a large number of cerebral diseases that are not primarily epileptic.

Therapy is thoroughly discussed from the standpoint of drugs, social and mental hygiene. Each patient must be an individual problem. The basis of medical treatment is the skillful use of dilantin, phenobarbital or bromides. Other drugs are discussed and procedures such as dehydration and x-ray therapy. The handling of the attacks and of status is thoroughly considered.

In a final chapter on psychological studies, Harrower-Erickson takes up the important question of mental deterioration. She shows quite conclusively that many extramural patients show no deterioration. In general, the later the onset the less deterioration is found. The effects of drugs are considered. The question as to whether or not there is an "epileptic personality" is answered in the negative. Let us hope that this careful study will lay the ghost of this perennial bugbear forever!

The book is well written, beautifully illustrated and excellently documented.

S. C.

THE FUNCTION OF THE ORGASM. Sex-Economic Problems of Biological Energy. By *Dr. Wilhelm Reich*. Translated by *Dr. Theodore P. Wolfe*. (New York: Orgone Institute Press, 1942.)

It must be quite wonderful to achieve the state of mind which Dr. Reich demonstrates throughout this very interesting book. He has reached absolute certainty and a mono-ideology which explains not only the neuroses and psychoses, impotence, frigidity, perversion and psychopathy, but also "disposition to cancer, cardiovascular hypertension, hyperthyroidism, emphysema, constipation, hemorrhoids, chorea, epilepsy, Raynaud's disease, chlorosis, peptic ulcer, tic, and obesity."[1] These quoted achievements are, however, mere trifles. By the discovery of the "orgone," the fortunate Reich is able to state without doubt or equivocation that

> "biological energy is atmospheric (cosmic) orgone energy, and this orgone energy can be demonstrated (*sic*) visually, chemically, and electroscopically in the soil, the atmosphere, in plant and animal organisms. The flickering in the sky which many physicists ascribe to terrestrial magnetism, and the flickering of the stars are the immediate expression of the motions of the atmospheric orgone. The electrical storms which disturb electrical apparatus at times of increased sun spot activity are, as can be shown experimentally (*sic*) an effect of the atmospheric orgone energy. . . . ."[2]

(The two "sics" are my only contributions to the above statements.)

Fortunately for its identification, orgone energy is blue.

> "The color of the atmospheric orgone is apparent in the blue sky and the bluish haze which one sees in the distance, particularly on hot summer days. Similarly, the blue-gray Northern lights, the so-called St. Elmo's Fire and the bluish formations which astronomers recently observed during a period of increased sun spot activity, are manifestations of the orgone energy. . . . . The "red" blood corpuscles, at a magnification of over 2000 ×, show a bluish glimmer; they are vesicles charged with orgone energy which they transport from the lungs to the body tissues. . . . . In cells and colloids, if viewed with a magnification of over 2000 ×, the orgone energy shows itself in the bluish coloration of the protoplasm and of the content of organic vesicles. Similarly charged with orgone are the vesicles in humus and all bions obtained by heating inorganic substances to incandescence and making them swell. Similarly, all gonadal cells, protozoa, cancer cells, etc., consist of orgone-charged, bluish energy vesicles. . . . . The human organism is surrounded by an orgonotic field which varies in range according to the individual's vegetative motility. The demonstration of this fact is simple"[3]—and easily proven (*sic*).

It would be a superfluous task to follow the chain of reasoning by which all this is established in an autobiography which includes the early psychoanalytic career of the author, his divergence from Freud, his expulsion from the psychoanalytic ranks and the development of those ideas by which the psychosomatic concept of "sexual stasis" becomes a cosmology. Society frustrates the infantile, adolescent and adult sex life; the sympathetic becomes the diabolic machinery by which anxiety is heaped up and expresses itself by clinical signs such as pelvic muscle tension and vegetative disturbances of all kinds—all this because no proper orgasm is experienced. The author goes into great detail about normal and abnormal orgasms and draws very simple diagrams to represent very complex events and situations. Incidentally, he makes generalizations which explain Fascism and all the social ills by the social perversion of the sexual life.

> "Unconscious longing for sexual happiness and sexual purity, plus simultaneous fear of normal sexuality and abhorrence of perverse sexuality, results in Fascist sadistic anti-semitism. . . . . In 1930, human sexuality was a Cinderella of society, no more than an object of dubious reform bodies. By 1940, it has become a cornerstone

[1] Page 324.

[2] Page 341.

[3] Pages 341 and 342.

of social problems. If it is correct that Fascism, in an irrational manner but successfully, utilized the sexual longings of the masses of people and thus created chaos, then it must be correct that the perversions which it allowed to erupt can be banished by a universal *rational solution of the problem of sexuality.*" [4]

Nothing corresponding to proof appears in this book. The familiar technique of expanding a point of similarity between phenomena into identity, of selective use of that which favors the point of view and the rejection of all the divergencies and difficulties, and a passionate adherence to an ideal of the perfect world which blinds one to the real world in which happiness is only an ephemeral by-product—all these and many other devices appear at the pitch of perfection in this book. To cite two samples of the mis-statements born of incompleteness, Reich says that the parasympathetic is the system which is behind joy and pleasure, thus the glistening eye of happiness. But he forgets that the lachrymose eye of sorrow is also parasympathetic. And either he does not know or he forgets to state that one of the most disorganizing of the symptoms of anxiety is the spastic colon, which is parasympathetic in origin. The truth is that sympathetic activity in and of itself is neither healthy, nor the reverse, but it is the balanced activity and interplay which is essential. Further, the chemical activity of the autonomic nervous system has made all such statements as Reich's quite obsolete. . . . . As a further example of the proofs he adduces, he reaches, by a very tortuous type of reasoning, the conclusion that "procreation, then, is a *function of sexuality* and not vice versa as heretofore assumed." [5] One has to do verbal gymnastics to reach this conclusion. Procreation appears on the biologic scene long before sex does. Sex appears as a specialized method of procreation, at first hermaphroditic, and later bisexual.

Dr. Reich writes with fervor and gusto, and his book is consequently quite fascinating, although it does not, I believe, merit the term "scientific." It states boldly and without mincing any words a truth, namely, that in many ways society frustrates the instinctive life of man in cruel and disastrous fashion. It attacks the smug assumption of most psychiatrists that normality is measured by adaptation to the social demands. This would be true only if society were rationally organized and if its demands and criteria were normal. But since the social structure is in many ways psychopathological, adaptation may be easier for psychopathic types than for normal individuals. No one has as yet really studied the physiology and pathology of Morals and the Mores. Reich is at least honest and fearless, even if in the opinion of the reviewer "he knows all the answers" and is developing a cult rather than a school of science.

A. Myerson, M. D.,
Boston, Mass.

[4] Pages 215 and 219.
[5] Page 253.

Technique of Analytical Psychotherapy. By *Wilhelm Stekel, M.D.* (New York: W. W. Norton & Co., 1940.)

This work, the last English translation from the extensive writings of the late Wilhelm Stekel, serves two purposes: it makes pungent but intelligent criticism of orthodox psychoanalytic theories and practice and affirms the possibility of a shorter type of analytical psychotherapy. It acts as a practical clinical guide to the conduct of analytical psychotherapy based upon the theories and methods of the author. As criticism it is unequivocal and challenging; as a statement of Stekel's own theories it is clear because enriched by much clinical example; as a guide to treatment it is, in the main, systematic and practical though often vague and incomplete.

The preface summarizes Stekel's position. Criticizing the unnecessary length of orthodox Freudian analyses and maintaining that this and other defects of orthodox psychoanalysis are the consequences of weaknesses in Freud's theoretical foundation, he says: "Psychoanalysts fail to recognize the essential point—that if they cling to Freud's technique they cannot cut short the period of treatment. Nothing but the 'active method,' by which free scope is left for the analyst's intuition, will enable us to achieve our end quickly. . . . . The happy days of interminable analysis have gone forever. . . . . Analysts must adapt themselves to the idea of short periods of treatment. . . . . After thirty years' experience of analysis, I no longer believe in the overwhelming significance of the unconscious (in the Freudian sense of that term). . . . . You cannot tamper with the foundations without endangering the stability of the whole edifice. The authority of his (Freud's) outstanding genius still makes his disciples toe the line, so that the first commandment of the orthodox is 'Thou shalt swear by the words of the master.' . . . . A science in which the master's utterances have become dogma is more of the nature of religion or sectarianism than of science, and is foredoomed to destruction."

Included in Stekel's criticism of the Freudian school is an unequivocal statement about the question of lay analysts. He maintains that, with very rare exceptions, analysts should be medically trained. This is not only a matter of safeguarding the public but of scientific orientation. Psychoanalysis is inseparable from general psychiatry and general medicine. And as to the future of psychoanalysis he states "—the old building must be razed to the ground. There will remain some of the original foundation, our knowledge of the working of psychic determinants, of the importance of the sexual problem, of the polyphony of thought processes. Freud's merits and Freud's significance remain overwhelming, but his researches were a beginning and not an end. The medical analysis of tomorrow will have to separate the wheat from the chaff, to combine the various doctrines and schools into an organic whole, and to establish an undog-

matic, unprejudiced psychoanalysis. Then the physician will become the educator of mankind."

The contents of the book are arranged rather systematically in respect to the selection of cases, the commencement of treatment, the course of treatment including types of resistance, transference, special types of reaction such as obsessional disorders and guilt and, finally, the termination of treatment. Many clinical examples are given of types of reaction or special problems arising under these headings. The text is easy to follow because the author's theoretical interpretations are illuminated by concrete example.

The chapters dealing with the commencement of treatment should be particularly helpful to beginners in analytical psychotherapy. He stresses the importance of a trial week of analysis in order to familiarize the psychiatrist with the personality structure of the patient before committing himself to a lengthy psychotherapeutic program. From his vast clinical experience Stekel gives many valuable hints as to how these early observations of the patient's reactions can contribute to prognosis and more efficient handling of the case. He goes quite extensively into the phenomena of resistance and transference and in connection with the latter, stresses the need for the psychotherapist to be himself analysed in order that his counter-transference will not interfere with the analysis. The analyst, he says, should be a man of wide reading, of universal culture so that he will be able to recognize the influence of the collective representations of the culture in the patient's fantasies and actions. Dream analysis is not heavily stressed in this particular book, apparently from lack of space since it has always been a prominent feature of Stekel's work. The last chapters deal with the analysis of obsessional disease, conscience, painful phenomena, and contain much theoretical material which illustrates Stekel's particular slant in the general field of analytical psychology. A final chapter deals with the termination of analytical treatment and contains some elaboration of Stekel's criticism of Freudian psychoanalysis, again stressing the practicability of shorter analyses and the need to free our orientations from some of Freud's basic assumptions.

It is impossible to summarize Stekel's theoretical position in a review but certain of his trends deserve emphasis. Among other things Stekel lays much more stress on the actual life situation of the patient than upon the infantile period. He goes so far as to claim that the prolonged search for infantile experience, as the roots of the patient's neurosis, is at least sterile if not actually harmful through systematically guiding the patient toward infantilism or providing time-wasting reasons to evade present day problems of adjustment. Stekel speaks of neuroses as "maladies of the time" and shows full awareness of their immediate causation in the stress and strain of modern community living. He points out that forms of neurosis change with the times and because of these observations he lays stress on the responsibility of parents and educators for the prevention of neurotic breakdown.

Whether one is in agreement with his theories or not, Stekel certainly commands respect because of his immense clinical experience, and his capacity for penetrating observation. He has had the courage to be an independent thinker and in taking a stand against Freudian orthodoxy he has made original contributions. The reviewer feels, however, that Stekel's work, as represented by this book, is definitely dated and does not constitute the new formulations of psychoanalytic doctrines for which he pleads in his preface. When he does not use the old jargon of psychoanalysis he invents a terminology of his own (for which a glossary has been appended) which does little else than add to the verbalistic confusion of the field. It is refreshing, however, to read such constructive criticism of Freudian orthodoxy, and the pungency of Stekel's prose style, so ably translated by Eden and Cedar Paul, is delightful.

DOUGLAS GORDON CAMPBELL, M. D.,
University of California.

GUIDE BOOK FOR BOYS. By *Stephen Habbe*. (Washington: National Training School for Boys, 1942.)

The National Training School at Washington is the only training school supported by the Federal Government—all other training schools are state schools. It is operated as a demonstration school by the United States Department of Justice, Bureau of Federal Prisons. It is the only training school for boys from the District of Columbia, but actually only 25 per cent of the school's population comes from that district; the other 75 per cent of the population comes from 30 different states in the Union and from Porto Rico. This Guide Book points out that over half of the boys at the training school were committed on the Dyer Act. One quarter of the boys were never in trouble before the delinquency that necessitated their coming to the National Training School. One third of them had been in training schools previously.

This Guide Book is intended as a "ready reference" for the boy who comes to the National Training School. It is prepared and written to give him, in simple and straightforward language, some facts concerning the nature of the institution, along with the rules and regulations governing its operation.

The first chapter of the book is headed "Life at the School" and is made up of a dialogue between two boys, one who has just arrived and the other who is just leaving the school. The one who is just leaving is telling the new arrival what a grand place it is to live in if you go by the rules and are willing to take advantage of the many opportunities for schooling, vocational training and recreation that the school has to offer. This dialogue is rather well done and expresses in an informal manner some very basic ideas. The next chapter presents some interesting facts about the school, concerning such things as its organization, daily program, the hospital, the place of religion, arguments for and against changing programs;

the kinds of clubs, athletics and hobbies that are available, etc. The third chapter deals with special problems that the boys are likely to be concerned with. One is, "What do you want to get out of your period in this school?" Matters of health, training, friends, personal control and happiness are discussed. Another subject is "Why boys get into trouble," with some suggestions for staying out of trouble. Another is basic principles for keeping well and strong. Still another is a brief discussion of getting ready to go home with an outline of the meaning of parole.

The reviewer feels that the Guide Book has been very well planned. It may prove somewhat formidable for many of the boys to deal with; and it cannot of course take the place of personal counselling. It may however serve as an excellent introduction and reference manual and may reduce to some extent the amount of counselling otherwise necessary. The effects of the use of this Guide Book will be well worth studying.

KENNETH ROGERS, PH. D.,
Big Brother Movement, Toronto, Canada.

DEVELOPMENTAL DIAGNOSIS. By *Arnold Gesell and Catherine S. Amatruda.* (New York: Paul B. Hoeber, Inc., 1941.)

This book is a compilation of previous publications by the authors, and although much broader in scope confines itself to diagnostic and prognostic procedures. They have had an unusual opportunity for research with both normal and abnormal children in the infant and pre-school age groups and have very ably condensed their results to furnish a guide to the understanding of growth in all of its aspects. The importance of early diagnosis, which is possible by the use of their criteria of growth of "amentia," is well considered. Establishment of other criteria of normal development is based upon an understanding of the usual age characteristics, in the various spheres of motor, adaptive, language and personal-social features of maturation. The authors point out that by careful observation and comparison with the norm, the exact level of development can be ascertained and a much earlier evaluation obtained.

Special attention is called to a new term in psychological parlance, the Developmental Quotient, which is technically computed in a manner similar to the Intelligence Quotient but is distinct from it. The Developmental Quotient evaluates the child from an integrated total picture, taking into account behavior in its widest meaning as the standard rather than measuring the so-called intelligence which is a part function. This fact is important, because recognition of the D. Q. at an early age may make it possible to predict the rate of growth with accuracy, the D. Q. being a constant factor—*i. e.*, a D. Q. of 50 at age 3 will indicate that the child will be 50 per cent developed at age 6 or at any other age selected. Furthermore, it is possible to determine the D. Q. of any specific aspect of major behavior in the motor, adaptability, language or personal-social spheres, which makes it a flexible device.

A section of the book is devoted to a classification of the various "amentias" with a discussion of all the known facts about them. The classification is practical, dividing them into primary and secondary groups enabling one to differentiate between the amentias which may be temporary and those that are fixed. The value of this type of classification is obvious. Considerable space is devoted to the neurological and other organic conditions which may produce retardation, with ample discussion of prematurity and precocity and their effect on maturation of the child. Attention is called to the syndrome of environmental retardation which usually results in institutionalized children.

The remainder of the book is a detailed account of the specific charts of normal growth and the procedures of direct examination and observation.

Complete description of the total behavior is arranged for the various age levels in tables which are based on the original developmental features mentioned above, the motor, adaptive, language and personal-social evidences of development. An interesting use of the cinema to study behavior of children is introduced, and the authors have a collection of selected movies which is available for study and teaching purposes.

MILTON H. FIRESTONE, M. D.,
Johns Hopkins Hospital, Baltimore, Md.

BASIC PROBLEMS OF BEHAVIOR. By *Mandel Sherman.* (New York: Longmans, Green & Co., 1941.)

The book, according to its author, is designed to present the "Clinical, experimental, psychological and psychiatric data" of a number of basic problems of behavior, and was planned not only for reference reading but also for a systematized course.

The purpose of the author is laudable, but one cannot help feeling that he has not quite achieved the high resolve of blending psychological and psychiatric material into a smooth and complete whole.

One looks in vain in the index or text for any reference to alcoholism, drug addiction, insulin, shock therapy, or any of the important behavior problems or outstanding new therapies. Freud is treated to one brief mention and Dr. Abraham Myerson to precisely twice the amount of space. Even though the reviewer's kindest friend wouldn't hint that he was a firm follower of Freud, he believes even Dr. Myerson himself would agree that such short shrift of the stormy petrel of psychiatry during our lifetime, is not a true evaluation of his place in psychiatry.

This it seems to the reviewer symbolizes the principal weakness of the book: it's good as far as it goes, but it doesn't go far enough. Splendidly conceived as a "psychiatric and psychological" textbook it just misses the boat.

C. C. BURLINGAME, M. D.,
The Neuro-Psychiatric Institute
of the Hartford Retreat,
Hartford, Conn.

THE CLINICAL APPLICATION OF THE RORSCHACH TEST. By *Ruth Bochner, M. A., Florence Halpern, M.A., and K. M. Bowman, M.D.* (New York: Grune and Stratton, 1942.)

This 216-page book is a simple and understandable presentation of a very difficult psychological procedure, the Rorschach experiment. In explaining the test procedure, the authors have followed the most accepted method devised to date. Their explanation and instructions regarding scoring of the record are perhaps a little too simple, especially for research purposes. However, for practical, clinical use there is sufficient information given. The discussions of the meanings of the various symbols derived by scoring are perfectly adequate for orientation of the beginner in Rorschach work.

The authors present a clear discussion of the test cards, although one cannot help feeling that reproductions of the cards in color would have enhanced the value of the text.

One of the most commendable features of the book is the presentation of twenty actual Rorschach records with the interpretations appended. To research workers these interpretations might conceivably be thought too superficial, but for the practising psychiatrist they might be adequate and serve as guides in learning the method.

R. M. FINNEY, M. D.,
Institute of Human Relations,
New Haven, Conn.

A SHORT HISTORY OF PSYCHIATRIC ACHIEVEMENT. By *Nolan D. C. Lewis, M.D.* (New York: W. W. Norton & Company, Inc., 1941.)

With a broad and comprehensive sweep Dr. Nolan D. C. Lewis has traced the history and progress of psychiatry from about 2600 B. C. to the present time. In this way he has shown how confused, complicated and rich is our heritage. The book serves as an excellent historical reference and as a guide to readers who wish to become more widely acquainted with outstanding leaders and their contributions in the field of psychiatry.

The latter part of the book is devoted to prospects for future achievement. The need for coordinated research is stressed and the suggestions offered should prove stimulating to students and workers. The author points out the great value of thoroughly studying the literature in research work, and shows that we are developing an American school of mental hygiene and psychiatry. This is another book of the Salmon Memorial Lectures that should be in every psychiatrist's library.

JAMES H. WALL, M. D.,
White Plains, New York.

THE PRINCIPAL NERVOUS PATHWAYS. By *Andrew T. Rasmussen, Ph.D.* (New York: Macmillan & Co., 1941.)

This manual presents 28 charts and schemas which have been carefully organized for instructing medical students and others interested in acquiring knowledge of the known nervous pathways in the brain and spinal cord, and their relations to the various peripheral nerves. The nervous system is here shown in functional units, in a way that displays the relationship of the structures anatomically and functionally, a system of presentation which facilitates an orientation in this complex subject. The parts dealing with the special sensory systems, the visceral systems and the innervation of the blood vessels should be particularly valuable to the internist to whom acquaintance with the main characteristics of the nervous system is essential for diagnostic purposes.

The recent developments in neurophysiology, experimental neurology and neurosurgery have added a great deal to the knowledge of the nervous system. By means of the newer instruments of precision, localization procedures have increased in accuracy and additional facts have been discovered. Therefore, in this second edition of the book the author has made a number of changes to include some of the new findings: "The more exact location of the lateral spinothalamic tract in the upper pons and midbrain region is important because its superficial location makes its surgical interruption feasible at these levels, although it has been cut also in the medulla oblongata, where a much deeper incision is necessary to stop pain from the cervical nerves. Representation of the major regions of the body in the thalamus having been established, it is possible to indicate some degree of localization in the diencephalic level and to follow this out to the cortex where localization has long been known. This has necessitated some changes in the designation of the thalamic nuclei in conformity with the most modern usage. Greater specificity in the cerebellar connections of the proprioceptive and vestibular systems has also been made."

A brief account of the usual methods employed in studying the finer structure of the nervous system has been included. A dynamic viewpoint is in evidence throughout, and the charts show at a glance the topographical relationships, as all structures are well labeled. Facing each figure is a page of condensed description of the relationships and practical significance of the structures outlined. These are more informative than the accounts usually accompanying anatomical plates.

It may be said that this is a labor-saving book which might well be adopted for class work for beginners in neurology and utilized as a review text for those who need some refreshment in this subject.

NOLAN D. C. LEWIS, M. D.,
New York State Psychiatric Institute
and Hospital,
New York, N. Y.

CONDITIONED REFLEXES AND PSYCHIATRY. By *Ivan Petrovitch Pavlov.* Translated and Edited by *W. Horsley Gantt.* (New York: International Publishers, 1941.)

Sir Frederick Banting, who visited Pavlov in his laboratory, referring to the new schools of research

physiology which had resulted from the great Russian's work, declared, "Pavlov will live forever."

Dr. Gantt deserves the thanks of all workers in the physiology of the nervous system and in the mental sciences for having made accessible in English the lectures and papers contained in the present volume. It is a sequel to *Lectures on Conditioned Reflexes* (1928) which included all Pavlov's public statements on the subject from the time the Nobel Prize was awarded him (1903) to the date of publication.

This second volume presents his writings from 1928 until his death in 1936 at the age of 86; but it covers a new field. In the last decade of his life Pavlov had turned his attention to psychiatry, although without previous clinical experience in that domain—a richly rewarding venture characteristic of the daring and scientific insight of the truly great investigator. As collaborator and friend of Pavlov and who had worked five years in his laboratory, Gantt has paid his tribute to the Master by offering this English version of his work.

Here we find discussions on the physiology of the higher nervous activity, experimental neuroses, human and animal neuroses, physiological basis of the symptoms of hysteria, and even an attempt at a physiological interpretation of obsessions and of paranoia. In one of the most interesting chapters, "Reply of a Physiologist to Psychologists," Pavlov comments on the question of free will. Man, he says, is a system, "roughly speaking, a machine," subject like all systems to the laws of nature; but the human system is distinguished by being most highly self-regulatory, and is at the same time "the supreme personification of the resources of a nature which is without limit, the realization of its powerful but still unknown laws." And then the Pavlovian credo: "And there still remains in life all that is also embraced in the idea of freedom of will with its personal, social and civic responsibility; for me there remains this possibility, and hence also the obligation for me to know myself and, constantly using this information, to maintain myself at the utmost height of my capabilities. Are not the social and civic duties and requirements, situations which present themselves to my system and which must lead to appropriate reactions that will promote the integrity and perfection of the system?"

Especially valuable is Dr. Gantt's introduction wherein from personal association he gives intimate glimpses of the man Pavlov and traces the phases of his scientific work. Here are summed up his methods and hypotheses and his conclusions are critically evaluated. It is not overlooked that he tended to oversimplify extremely complex processes on the basis of the conditioned reflex; and that the analogy between the objective symptoms in a dog and human psychopathological events may not hold. While recognized as a scientist and experimentor of the first order, it was perhaps a handicap for Pavlov to become a sort of national hero. This fact coupled with the aggressive enthusiasm of his style lent a tone of dogmatism to his utterances which his own scientific principles would have disclaimed; for he was always ready to acknowledge that he had been mistaken in a theory when the contrary facts were presented. His quest for truth was a passionate quest and to it he devoted his life almost to its last moments. "Science requires your whole life, and even if you had two lives to give it would still not be enough."

The book contains a number of illustrations including the delightful picture of Pavlov, at the age of 85, speaking with animated gesture at the fifteenth International Physiological Congress in Leningrad in 1935.

C. B. F.

(MRS.) ELEANOR CLARKE SLAGLE

IN MEMORIAM

ELEANOR CLARKE SLAGLE

1876-1942

Mrs. Eleanor Clarke Slagle, distinguished leader in occupational therapy, who had been director of occupational therapy for the New York State Department of Mental Hygiene since 1922, died at her home at Phillips Manor, New York, September 18, 1942.

Eleanor Clarke was born in 1876 at Hobart, New York, the daughter of William and Emmeline Davenport Clarke. Her brother, Hon. John D. Clarke, served his district several terms as member of Congress.

After completing studies in the schools of her native village, Eleanor Clarke attended Claverack College in Columbia County, New York, and later the School of Civics and Philanthropy in Chicago. She married Robert E. Slagle of whom little is known. He died several years ago. Mrs. Slagle entered the social welfare field and became a worker in Hull House under the guidance of Julia Lathrop and Jane Addams. Largely through their influence Mrs. Slagle in 1908 became interested in occupational therapy and took the course in "invalid occupation" offered by the Chicago School of Civics and Philanthropy. In 1912, soon after the opening of Phipps Clinic in Baltimore, Mrs. Slagle assisted Dr. Adolf Meyer in introducing occupational therapy in the institution. Dr. Meyer recognized the value of the occupational treatment for mental patients and became one of Mrs. Slagle's strongest supporters. In 1917, Mrs. Slagle conducted training courses in occupational therapy at Hull House. Students taking the course were superior young women who were eager to have a part in the World War then in progress. Several of these students later directed occupational therapy in large mental hospitals.

In 1918, Mrs. Slagle was called to the service of the Illinois State Department of Public Welfare to organize and supervise occupational therapy in the mental hospitals of that state. Her success in this work was phenomenal. Naturally attention was soon directed to the remarkable occupational therapy work being carried on by the Illinois hospitals, and Mrs. Slagle's reputation as a promoter and organizer of occupational therapy was established.

In 1922, Mrs. Slagle was requested by Commissioner C. Floyd Haviland, to organize and direct occupational therapy in the mental hospitals of New York State. For many years previous to that time the hospitals had had classes in so-called diversional activity but the classes were small and little effort had been made to expand this form of treatment. When Mrs. Slagle arrived on the scene only a few hundred patients were receiving occupational treatment in the New York hospital system. However, the need for an expansion of the work was recognized by the Commissioner and superintendents. Under Mrs. Slagle's skillful guidance occupational classes for patients were multiplied. Capable occupational therapists were employed. A new record system was installed and the treatment was carried forward as a systematic, therapeutic undertaking under the direction of hospital physicians. The work continued to grow and for some years past more than 50,000 patients have annually received the benefits of occupational treatment in the institutions connected with the New York State Department of Mental Hygiene.

In 1922, Mrs. Slagle with Mr. T. B. Kidner, Dr. William R. Dunton and a few others formed an association for the promotion of occupational therapy which was named the American Occupational Therapy Association. The Association has had a remarkable growth and now includes within its membership nearly all of the trained occu-

pational therapists in the country. Its annual meetings are attended by hundreds of workers who are keenly desirous of learning more effective methods for carrying on their work. Mrs. Slagle served the Association as secretary and as president for a total of 16 years. When she retired from office a complimentary dinner given in her honor was attended by Mrs. Franklin D. Roosevelt, Dr. Adolf Meyer, Dr. Joseph C. Doane and many other national leaders, in addition to the membership of the Association. President Doane on behalf of the Association presented Mrs. Slagle with a gift of money in a container which bore the following inscription:

ELEANOR CLARKE SLAGLE

* * *

She has been the corner stone in the development and promotion of occupational therapy
Now we in turn ask that she accept our gift as the corner stone of her new home which we hope will be a place of rest and happiness and release from her arduous duties
We offer it with deep affection and profound gratitude for her twenty-one years of untiring service in our behalf

* * *

ATLANTIC CITY
September 14, 1937

The gift enabled Mrs. Slagle to purchase her home at Phillipse Manor which she greatly enjoyed during the remaining years of her life.

Mrs. Slagle had the happy faculty of winning friends wherever she went. The members of the American Occupational Therapy Association regarded her affectionately as a mother and looked to her for help and guidance. Her advice and counsel were sought by hospital superintendents throughout the United States and also in Canada, England, Scotland and India. No other woman since the days of Dorothea Lynde Dix and Florence Nightingale has done as much as Mrs. Slagle for the betterment of the care and treatment of hospital patients.

HORATIO M. POLLOCK.